TRANSACTIONS

OF THE

OTOLOGICAL SOCIETY

VOL. III

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TRANSACTIONS

OF THE

OTOLOGICAL SOCIETY

VOL. III.

TRANSACTIONS

OF THE

OTOLOGICAL SOCIETY

OF THE

UNITED KINGDOM

VOL. III

THIRD SESSION, 1901–1902

WITH LIST OF OFFICERS, MEMBERS, ETC.

EDITED BY

ARTHUR H. CHEATLE, F.R.C.S.

LONDON
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OFFICERS AND COUNCIL

OF

THE OTOLOGICAL SOCIETY OF THE UNITED KINGDOM.

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ARTHUR SANDFORD.

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CHARLES A. BALLANCE. STEPHEN PAGET.
DUNDAS GRANT. JOHN STORY.

LIST OF MEMBERS OF THE SOCIETY.

Honorary Member.

Professor ADAM POLITZER, Vienna.

EXPLANATION OF ABBREVIATIONS.

P = President.	*L* = Honorary Librarian.
VP = Vice-President.	*C* = Councillor.
T = Honorary Treasurer.	*S* = Honorary Secretary.
Italics = Original Members.	*E* = Honorary Editor of the *Transactions*.

The abbreviations placed after a Member's name indicate offices which have been held by him.

ABBOTT, FRANCIS CHARLES, B.Sc., M.B., M.S., F.R.C.S., 44 Welbeck St., W. Aural Surgeon St. Thomas's Hospital. *Elected March* 5, 1900.

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Yearsley, Percival Macleod, F.R.C.S., 10 Upper Wimpole St., W. Surg. Royal Ear Hosp.

RULES AND REGULATIONS.

1. Name of the Society.—The Society shall be called "The Otological Society of the United Kingdom."

2. Objects of the Society.—The objects of the Society shall be

(*a*) The exhibition and demonstration of patients, models, drawings, and specimens (microscopical or otherwise), illustrating the Anatomy, Physiology, Pathology, and Therapeutics of the Ear.

(*b*) The reading of papers and the discussion of questions in Otology, previously approved by the Council.

(*c*) The investigation by Committees—

(i) Of matters of public importance relating to Otology.

(ii) New methods of investigation or treatment of the diseases of the ear.

3. Constitution of the Society.—The Society shall consist of Ordinary and Honorary Members.

The Officers of the Society shall be elected from among the Ordinary Members, and shall consist of a President, not less than two, and not more than four, Vice-Presidents, a Treasurer, a Librarian, an Editor of the *Transactions* and two Secretaries, who, with six other Members, shall constitute the Council. At least one-fourth of the Council shall consist of Members not resident in London.

4. Election of Members.—Candidates shall be proposed on a form provided for the purpose, and signed by at least three Members from personal knowledge, who shall state the grounds of their recommendation, which shall be, either

(*a*) Contributions to Otology.
(*b*) The charge of an Aural Clinic approved by the Council
(*c*) Professional eminence.

The names of those proposed as new Members shall, in the first instance, be submitted to the Council, with whom the power shall rest of declining to allow the nomination to proceed.

The proposal paper shall be read at one ordinary meeting, and the ballot shall be taken at the next meeting.

No election shall take place unless ten Members vote; one black ball in five shall exclude.

5. Form of Admission by the Chairman.—Members shall be admitted personally by the following form, after signing their names in the admission book, and thereby agreeing to abide by the rules of the Society, and paying their admission fee and first annual subscription.

Form of Admission.—"By the Authority and in the name of the Otological Society of the United Kingdom, I admit you a Member thereof."

6. Honorary Members.—The Council shall have the power of electing men of distinguished eminence in Otology as Honorary Members. The number of Honorary Members shall not exceed six.

7. Expulsion of Members.—The Council shall have the power of expelling from the Society any Member whose conduct or mode of practice is considered unworthy of the Society. Notice of the Council's intention to expel him shall be sent in writing to the address in the Society's books, and he may appeal to the Society, whose vote, under Rule 8, shall be final.

8. Appeal.—A Member who appeals against the decision of the Council, under Rule 7, can be finally expelled only at a General Meeting specially called for that purpose, and of which a written notice shall have been sent to every Member at least fourteen days previously. At least twenty votes must be accorded, and four-fifths shall carry the expulsion.

9. Subscriptions.—There shall be an Admission Fee of One Guinea.

The Annual Subscription shall be One Guinea, payable to the Treasurer in advance at the date of the Annual General Meeting. Any Member whose subscription is six months in arrear shall be reminded of the same by the Treasurer, and if it be not paid within the current year he shall again be reminded by the Treasurer, and if he fail to pay his subscription, his name may be removed by the Council from the list of Members.

10. The Election of Officers and Council.—(*a*) All the Ordinary Members shall be summoned by letter to the Annual Meeting in December, notice being given a fortnight beforehand, and the hour of meeting being stated.

(*b*) The President, Vice-Presidents, Treasurer, Librarian, Editor, Secretaries, and Council, shall be elected by ballot at each Annual Meeting, and shall commence their duties on the day following election.

(*c*) One-third of the Ordinary Members of the Council shall be replaced in rotation at each Annual Meeting by an equal number of Ordinary Members chosen from the Society at large.

(*d*) Balloting lists of the Members recommended by the Council to fill the vacant offices shall be prepared by the Secretaries, and forwarded, together with the summons to the Annual Meeting, to every Ordinary Member of the Society.

(*e*) Two Scrutineers, appointed by the President at the commencement of the Annual Meeting, shall receive the balloting lists during the first hour, at the end of which they shall report the result to the meeting.

(*f*) In the event of equality of suffrage the President shall determine by lot.

(*g*) If a Member wishes to propose for ballot any candidate for office other than those whose names stand upon the list recommended by the Council, the name of such candidate, duly proposed by one Member and seconded by two other Members, shall be sent to the Senior Secretary at least a week before the Annual General Meeting.

(*h*) The Council shall have the power of filling up any vacancies which may occur in any of the offices of the Society between one Annual Meeting and another.

11. The President and Vice-Presidents.—The President shall regulate all the proceedings of the Society and Council, state and put questions, interpret the application of the rules and regulations, and decide every doubtful point. He shall sign the minutes of General and Council Meetings.

In the absence of the President, one of the Vice-Presidents, Treasurer, or some Member chosen by the meeting, shall perform his duties. The President and Vice-Presidents shall not serve for more than two consecutive years.

Every third President shall, if practicable, be resident out of London.

12. The Secretaries.—There shall be a Senior and a Junior Secretary elected for each session. The Senior shall retire at the end of each session, and shall, if the Society approve, be succeeded by the Junior. The Secretaries shall have the management of the correspondence of the Society and Council. They shall attend meetings. They shall take minutes, which they shall read at the following meeting. They shall notify to new Members their election. They shall have charge of, and keep a register of, all papers communicated.

One of the Secretaries shall, if practicable, be resident out of London.

13. The Treasurer.—The Treasurer shall receive all moneys due to the Society, and make all payments ordered by the Council, keeping an account of all such receipts and payments. He shall keep a printed receipt book for subscriptions, and every receipt and cheque shall be signed by him. He shall submit to the Council a written report of the financial state of the Society, for presentation to the Annual General Meeting. All moneys shall be banked in the name of the Society. The Treasurer shall not hold office for more than five consecutive years.

14. Librarian.—The Librarian shall not hold office for more than five consecutive years.

15. Editor of the "Transactions."—The Editor of the *Transactions* shall not hold office for more than five consecutive years.

16. The Council.—The Council shall have the management of the affairs of the Society. They shall meet as required during the session of the Society. Notice of the hour of meeting shall be transmitted by the Secretaries to each Member. Four shall form a *quorum*, and six shall form a *quorum* when the question of the expulsion of a Member has to be considered. The President, or any three Members, may call a special meeting.

They shall determine questions by vote, or by ballot if demanded, the Chairman having the casting vote. They shall call a special meeting or meetings after the close of the session to determine what communications and illustrations shall be published in the *Transactions;* they shall make such regulations and issue such orders as shall appear to them conducive to the good government of the Society, and to the proper management of its affairs, subject to the Rules of the Society. They shall appoint Investigating Committees as may be required.

17. The Society's Transactions.—The Transactions of the Society, under the designation of "*Transactions of the Otological Society of the United Kingdom,*" shall be published in such manner as the Council may direct. The *Transactions* shall be presented to all Members of the Society who have paid their annual subscription. No Member whose entrance fee or subscription is in arrear shall be presented with the *Transactions.* The Council shall be empowered to present, in the name of the Society, copies of the *Transactions* to such scientific bodies as they may think fit.

18. Investigating Committees.—The Council shall, as occasion demands, appoint Committees of Members of the Society, and, if desirable, one or more Non-Members, for the purpose of investigating questions of importance in Otological science, and shall have authority to grant such sums of money as they may deem necessary for the expenses of these investigations. The reports of such Committees shall be

presented to the Council to be dealt with as they may deem most advisable. Such Committees shall be called "Investigating Committees"; they shall consist of not less than three Members. The Investigating Committees shall continue to act until they have reported on the subject referred to them, or been dissolved by the Council. Every Member who has acted on an Investigation Committee shall sign the final report, or shall state in writing his reason for declining to do so.

The report shall be first received and considered by the Council, which may be specially summoned for that purpose, and shall afterwards, with their sanction, be presented at an Ordinary Meeting of the Society.

The Council shall be informed by their Secretary of the retirement of any Member of an Investigating Committee, in which case the Council may at their discretion appoint another Member of the Society to fill the vacancy.

The Investigating Committees shall render to the Council an account of all money received by them for the purpose of their investigations.

The Council shall have the power to dissolve an Investigating Committee whenever they may deem it expedient.

19. Ordinary Meetings.—(*a*) The Ordinary Meetings of the Society shall be held on the first Monday, or some other day selected by the Council, at 4.30 P.M., in December, February, March, and May, in London or elsewhere, as the Council may decide.

(*b*) Each Member of the Society shall have the privilege of introducing a visitor at every Ordinary Meeting, on entering his visitor's name in the attendance book; but no visitor shall be introduced more than twice in the same session.

(*c*) The business of the Society at the Ordinary Meetings shall be:

(i) The reading of papers and report of cases.
(ii) The demonstration of cases.
(iii) The exhibition and examination of specimens (microscopical or otherwise), drawings, instruments, models, methods of treatment, and the discussion of Otological subjects.

(*d*) At the Ordinary Meetings of the Society nothing relating to its laws or management shall be brought forward.

(*e*) At Ordinary Meetings ten Members shall form a *quorum.*

(*f*) Additional Ordinary Meetings shall be held if the Council think them necessary.

(*g*) Papers (which must be written in form fit for printing) shall not, as a rule, be of such length as to occupy more than fifteen minutes in delivery. An abstract of each communication, for publication in the Medical Journals, shall be given to the Secretaries before the end of the Meeting at which the communication is read.

(*h*) Members wishing to read papers previously approved by the Council, or show cases, specimens, &c., shall, if possible, give notice thereof to the Secretaries ten days before the meeting.

(*i*) Papers on cases already published elsewhere by the author shall not, as a rule, be received.

(*j*) All papers shall be handed to the Secretaries immediately after being read.

(*k*) In any discussion, each Member taking part shall write on a form provided for the purpose, an abstract of his remarks, which shall be given to the Secretaries before the end of the meeting.

(*l*) Every paper read before the Society shall be the exclusive property of the Society, and the author shall not be permitted to withdraw it, except by permission of the Council. If, in contravention of this rule, a paper read before the Society be published elsewhere by the author, it shall thereby be disqualified for admission into the Society's *Transactions.*

20. The Annual General and Special Meetings.—The Annual General Meeting of the Society, for the election of the officers and other Members of the Council, shall be held in December. All proposals to enact, alter or repeal rules shall be proposed by the Council only at the Annual or Special Meeting of the Society, notice of all such proposals being transmitted to every Member, together with the

summons to the Annual or Special Meeting. For the adoption of rules or changes so proposed, the votes of two-thirds of the Members present must be in favour of the proposal.

Any Member of the Society may suggest to the Council alterations in the rules, by letter addressed to the Secretaries.

A Special General Meeting may be called at any time by the Council, or at the written request of any ten Members, giving at least fourteen days' notice by letter to every Member of the Society resident in the United Kingdom, of the time of meeting and the business upon which it is summoned, and no business shall be entered upon at such meeting except that which has been notified.

21. Library Regulations.—(*a*) The Library shall be open at the same hours as that of the Medical Society, viz., from 1 P.M. to 6 P.M. daily, except on Saturdays, when it will be closed at 3 P.M.

(*b*) Members may obtain books at 11 Chandos Street, between those hours on signing a book provided for that purpose. But any books or periodicals may be placed by the Council on a separate list, such books not being allowed to be removed from the Library.

(*c*) A book must be returned at the expiration of a fortnight if wanted by any other Member. The Librarian will in such a case write to the Member in whose name the book was taken out.

(*d*) If the book be not returned within four days of such notice, a fine of 6*d*. will be charged for each day that the book is retained beyond such days of grace.

(*e*) Members resident in the country can obtain books by writing to the resident Librarian, and transmitting the cost of postage. Such books are sent at the borrower's risk.

(*f*) A Member taking out a book will be held responsible for its being returned in good condition.

SECOND ANNUAL MEETING.

Monday, December 2nd, 1901.

The President, SIR WILLIAM DALBY, in the Chair.

The following gentlemen were elected Members of the Society:

John Malcolm Farquharson, Leslie Samuel Manning, Peter Henderson Abercrombie, Atwood Thorne, Chichele Nourse, E. H. Wyatt Wingrave.

The following gentlemen were nominated for election:

Charles Arthur Parker, F.R.C.S. (Ed.), 141 Harley Street, W.

William A. McKeown, M.D., M.Ch. (Q.U.I.), 20 College Square East, Belfast.

James Kerr Love, M.D. (Glasg.), 10 Newark Drive, Glasgow.

Herbert Furnivall Waterhouse, M.D. (Ed.), F.R.C.S., 81 Wimpole Street, W.

H. M. Masina, F.R.C.S., Grant Medical College, Bombay.

Albert Alexander Gray, M.D. (Glasg.), 14 Newton Terrace, Glasgow.

The following reports were presented and accepted:

REPORT OF COUNCIL.

Besides the Annual Meeting, three Ordinary Meetings have been held during the past Session. The attendance of Members has increased, and the material has always been

more than could be dealt with. The Ordinary Meeting held in Edinburgh was an entire success, and the Society owes special thanks to Dr. McBride, Dr. Mackenzie Johnston, and Dr. Logan Turner, for the excellent arrangements made by them.

We have to record, with deep regret, the death of Mr. Stone, of Liverpool, one of the original Members of the Society.

Nine new Members have been elected during the Session, and fourteen gentlemen now await nomination and election.

One Member has resigned.

LIBRARIAN'S REPORT.

Subjoined is a list of the books and pamphlets presented to the Library during the year. The best thanks of the Society are due to the donors. Exchanges of *Transactions* have been effected with the following Societies through the courtesy of the gentlemen whose names are inserted, *viz.* :—

The American Otological Society (Dr. F. L. Jack), the Danish Oto-laryngological Society (Dr. E. Schmiegelow), the Dutch Laryngo-rhino-otological Society (Dr. H. Burger), the German Otological Society (Dr. A. Hartmann), and the Society of Hungarian Otologists and Laryngologists (Dr. Ludwig Polyak).

Exchanges have also been arranged with seven special Journals, *viz.* :—

Annales des Maladies de l'Oreille, du Larynx, du Nez, et du Pharynx ; Archives Internationales de Laryngologie, d'Otologie et de Rhinologie ; Revue Hebdomadaire de Laryngologie, d'Otologie et de Rhinologie ; Monatsschrift für Ohrenheilkunde, etc. ; Bolletino delle Malattie dell' Orecchio, della Gola, e del Naso ; Archivio Italiano di Otologia, Rinologia e Laringologia ; and *Archives of Otology.*

The *Société Française d'Otologie de Laryngologie* and the *Archive für Ohrenheilkunde* have declined an offer of exchange.

From four Societies and two Journals no reply has been received.

In order that it may become of value as a Library of

Reference further contributions are much needed, and may be sent to me at 11 Chandos Street, London, W.

I wish to draw the attention of Members to regulations passed by the Council, a copy of which has been sent to each Member of the Society, and which will appear in the next volume of the *Transactions*.

TREASURER'S REPORT.

Cash Statement up to December 4, 1901.

	£	s.	d.		£	s.	d.
CREDIT . . .	143	13	3	DEBIT . . .	85	5	3
Still to receive from newly-elected Members	8	8	0	Owing to Treasurer .	50	0	0
				Still to be paid:			
				Rent of Rooms .	12	12	0
				Honorarium to Librarian . . .	4	4	0
				Cost of *Transactions* unknown . .			
	£152	1	3		£152	1	3

The following alterations and additions to the Rules and Regulations were passed:

1. That an Editor of the *Transactions* be appointed under the same terms as the Treasurer and Librarian, and that all Rules bearing on the subject be altered.

2. That in Clause (*b*) of Rule 10, the words "the day following" be introduced after "duties on."

The following gentlemen were elected as Officers and Members of the Council for the Session 1901-02.

President: URBAN PRITCHARD.

Vice-Presidents: PETER MCBRIDE, EDWARD LAW, ARTHUR SANDFORD.

Hon. Treasurer: ALPHONSO ELKIN CUMBERBATCH.

Hon. Librarian: E. CRESSWELL BABER.

Hon. Editor of the *Transactions:* ARTHUR HENRY CHEATLE.

Hon Secretaries: WILLIAM MILLIGAN, W. JOBSON HORNE.

Council: Sir WILLIAM DALBY, ADOLPH BRONNER, DUNDAS GRANT, CHARLES A. BALLANCE, STEPHEN PAGET, JOHN STORY.

A case of removal of a necrosed labyrinth, with specimen.

By Richard Lake.

The patient was a man of fifty-four years of age, who first came under Mr. Lake's treatment two years ago, at that time giving the following history:—He had had discharge from the left ear for fifty years, and, as far as he remembered, had always been deaf with it; in fact, he said absolutely deaf. For two weeks before he came he had suffered great pain in the region of the ear.

On examination, the meatus was found to be occluded by swelling of the soft parts. The ear projected from the head, the mastoid process was red and tender, and fluctuation was easily obtained. He was immediately admitted into the hospital, the abscess incised, and the radical operation performed. As the posterior wall of the meatus was extremely thickened, it was almost entirely removed. He progressed very well for some weeks, when several pieces of necrosed bone came away, and the meatus was observed to be rapidly filling with granulation tissue. The wound was then opened again, and the whole cavity carefully curetted. This, however, was of no avail, for the whole cavity, including the external meatus, was gradually obliterated, and as the Members of the Society might remember, the case was presented at the last Meeting as one of obliteration of the external meatus after operation. At that time there was no sign of any external meatus, nor was there any open wound behind the ear, the patient having been quite well for over six months, and remaining so until the beginning of last September, when he again came to the hospital with a slight discharge behind his ear. A small sinus was present behind the pinna, discharging a little thin sanious fluid. He also complained of slight pain, and said he did not feel as well as usual.

He was treated for three weeks with antiseptics, when the pain becoming rather worse, the advisability of another

operation was suggested, and he was to have been admitted to the hospital for operation on the 6th of October.

On the 5th of October, however, he presented himself again with complete facial paralysis on the left side, and was admitted to the hospital by Dr. F. Spicer, who quite agreed as to the necessity of a careful exploration of the part.

The patient was anæsthetised, and the ear turned forwards in the ordinary manner. A small sinus was found in the site of the anterior part of the external meatus, the rest of the previous opening in the bone being entirely filled up with fairly dense compact bone. With the bony sinus as a guide, the middle ear was found as a small cavity, full of dense fibrous tissue. This cavity, which must have included the antrum and attic, being, apparently, not more than one third of an inch, by, perhaps, three sixteenths of an inch. The original idea had been to expose the facial nerve in its whole length. A small point of white necrosed bone, however, was found at the bottom of this cavity. This was very firmly fixed, and, in order to free it, it was necessary to cut away the bone at the bottom of the wound until a circular opening of about half an inch in diameter was made. In doing this, the position of the sequestrum was shifted, and probably broken in half. The larger of the two sequestra was eventually removed, it consisted of that part of the bony labyrinth which contains the external and superior semicircular canals and the vestibule, together with part of the internal auditory meatus. The second sequestrum consisted of part of the cochlea, and with it the membranous cochlea. In removing the larger sequestrum the facial nerve was torn through.

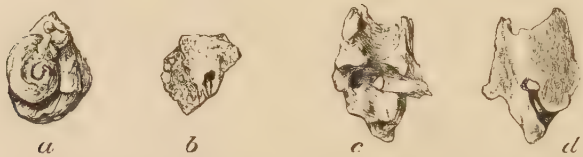
After removal of these sequestra, there was a cavity at the bottom of the wound which would easily have admitted the tip of the index finger, and one could see certain bluish membranous structures, which, he was inclined to believe, were the remains of the membranous semicircular canals and vestibule. These were not, however, removed. The operation lasted about an hour and a quarter.

The patient progressed well, but for the first three weeks the dressings were always coming through, probably from a leakage of cerebro-spinal fluid.

The patient expressed himself as feeling ten years younger, and said he had obtained relief from the most annoying tinnitus, which, however, he had borne with a stoical silence.

The operation was one which had been performed by Jansen, of Berlin, and the Members of the Society would remember the morbid specimens he (Mr. Lake) showed demonstrating the comparative ease with which it could be performed.

FIG. 1.



a, Bony and membranous cochlea; *b*. sequestrum containing part of a semicircular canal; *c*, *d*, sequestrum containing portions of remaining semicircular canals, internal auditory meatus, and vestibule.

The case had also another aspect, to which he wished the Members to direct their attention. In some cases that have been reported, where the cochlea, or part of the cochlea, had been exfoliated, a certain amount of hearing was reported to have remained. In this case the membranous, as well as the osseous, cochlea had been removed (of course, unintentionally); and the question may be raised as to whether the membranous cochlea remaining in connection with the auditory nerve would account for any remnant of hearing found in cases of exfoliation of the osseous cochlea.

A case of chronic suppurative otitis media; perforation of Shrapnell's membrane; granulation polypus; caries; mastoid operation; grafting operation. Cure with considerable improvement in hearing power.

By W. MILLIGAN.

The patient, A. S., a female aged 30, had suffered for many years from right-sided suppurative middle ear disease,

with fœtid discharge and gradually increasing deafness. When first examined, a perforation of Shrapnell's membrane upon the right side was found. There was a considerable amount of fœtid discharge oozing through the perforation, which was partially blocked by a granulation polypus. The hearing power was one fortieth of the normal. Antiseptic treatment was at once instituted, and subsequently the granulation was removed and chromic acid applied. Suppuration, however, continued, and was occasionally fairly profuse and accompanied by attacks of pain in the head and ear. After several months of treatment with intratympanic antiseptic injections, etc., it was decided to remove the membrane, the malleus and incus and the outer attic wall. This was accordingly done under chloroform, and treatment by means of antiseptic packing continued for some months more. Fœtid suppuration still continued, and ultimately a complete and radical mastoid operation was performed, the cavity being subsequently grafted according to Ballance's method. The result had been most gratifying—complete healing with arrest of all suppuration taking place and a considerable improvement in hearing, especially for conversation, ensuing.

A case of temporo-sphenoidal abscess.

By Dundas Grant and Charles A. Ballance.

P. B., male, *æt.* 8, admitted to St. Thomas's Hospital, August 21st.

Previous history.—Right otorrhœa since measles seven years ago.

Present illness.—Commenced seven weeks ago with fever and headache. During the last five weeks he has vomited all food.

Condition on admission.—A sickly-looking boy, lying on his right side in bed, with the limbs flexed. The skin was earthy white and the body was emaciated. Questions were answered clearly and coherently, but the boy was sleepy and

lethargic, and complained of frontal headache. The right eyeball was paralysed (ophthalmoplegia interna)—the right pupil stabile and dilated—and the right disc showed optic neuritis. There was paresis of the lower part of the left side of the face, the left hand and leg. The march of the paralysis had been in the order—leg, arm, face showing there was pressure on the internal capsule. The knee-jerks were brisk and Babinski's sign was present. No affection of sensation. No retraction of head. There was a little foul pus in the right ear. T. 97·4. P. 60.

Operation.—August 21*st.* The complete mastoid operation was carried out. Cholesteatomatous material occupied all the cavities. On careful examination of the boundaries of the tympano-antral cavities no visible track of disease leading into the skull was discovered. The tegmina antri and tympani were then removed. Their upper surfaces did not appear diseased, but the dura exposed was not pulsating, though it appeared natural, being neither softened nor altered in colour. A knife was now plunged directly upwards through the exposed attic dura, making an incision half an inch long, and a large quantity (ʒiij at least) of pus escaped. A probe showed that the cavity in the brain extended forwards to the tip of the temporal lobe, and backwards into the occipital. A narrow gauze wick was carried into the abscess cavity for drainage, and the wound dressed in the ordinary way.

Convalescence was uninterrupted. A hernia formed not larger than half a walnut. By September 20th the child was practically well and was rapidly gaining flesh.

The organism causing the abscess was bacillus coli communis.

A case in which a ragged opening in the dura was closed by an epithelial graft.

By Charles A. Ballance.

T. L., male, *æt.* 59. Admitted to St. Thomas's Hospital on May 7th, 1901.

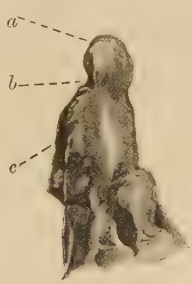
Previous history.—Double otorrhœa at age of 8, following scarlet fever. The left ear had always been the worse. Discharge often profuse and offensive. Has had attacks of illness lasting two or three days during the last few years; with pain in the left ear, headache, vertigo and occasional vomiting.

On examination of the left ear, the inner part of the canal was seen blocked by granulations through which pus of foul odour was issuing.

May 8. *Complete mastoid operation.*—All cavities filled with foul cholesteatomatous pus. Osseous roof of attic and antrum had disappeared; and the dura in these regions was soft and granulating.

May 24. *Epithelial grafting operation.*—Since previous operation patient had looked ill, and had had a good deal of headache and vertigo.

FIG. 2.



Cast of operation cavity of this case made in dentist's wax. The cast was made by Dr. Cathcart, the wax being previously softened in hot carbolic lotion. It demonstrates the opening in the dura mater. (*a*) Wax which passed into intradural cavity; (*b*) constriction of mould at dural opening; (*c*) anterior wall of osseous meatus.

On careful curetting of the cavities, a ragged hole about one-third of an inch in diameter was seen in the dura over the attic. Through this hole the brain was visible, and a little clear fluid was escaping.

The graft was arranged to cover the hole in the dura.

Convalescence.—After the second operation, the patient rapidly improved, and the headache and vertigo disappeared.

June 7th.—The plugs retaining the graft were removed.

A day or two later the patient left the hospital well.

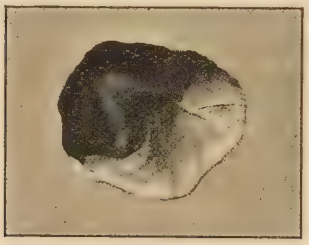
November 16th.—The area covered by the graft is now visibly pulsating.

Patient quite well.

A cast showing how a record can be kept of the complete mastoid operation.

By G. C. Cathcart.

Fig. 3.



The operation was performed by Mr. Ballance, and the cast from which the mould was made was taken by Dr. Cathcart. It shows an abnormal prominence of bone in the region of the horizontal semicircular canal, due, no doubt, to the irritation of otorrhœa of twenty years' standing.

Case of lateral sinus thrombosis. Operation. Recovery without ligation of internal jugular.

By Herbert Tilley.

Charles G., *æt.* 14 years, was brought to Golden Square Hospital complaining of severe earache of three weeks' duration, associated with a painful swelling behind and below the right ear.

There was a history of discharge from the right ear for 9½ years, but until three weeks before admission to the hospital there had been no complaint of earache.

During the latter time he had suffered from severe earache which kept him awake most of the night, and had incapacitated him from any occupation during the day.

He had frequently felt giddy but had not vomited, neither had there been any shivering fits nor definite rigors. On admission the boy looked extremely ill, the tongue was furred, pulse 120, and temperature 104·2°.

On examination of the right ear the meatus was somewhat swollen and contained a small quantity of dirty grey offensive pus. Granulations in a macerated condition occupied the tympanic region, and the carious remains of the ossicles could be made out by a probe.

The soft tissues over the mastoid were slightly red, œdematous and painful on deep pressure. This swelling was continued below into a similar condition of the soft parts behind the ramus of the jaw, the tumefaction ceased at the level of the cricoid cartilage, where it ended somewhat abruptly. The cervical swelling was tender on pressure, the tenderness being continued downwards to within an inch of the inner end of the clavicle.

Any movement of the head was painful, and consequently it was held somewhat stiffly by the patient.

The mastoid antrum was opened in the ordinary manner, but only the smallest quantity of pus was to be found within its cavity. On opening up the cells below it a small track of pus was discovered which led from the inner and posterior meatal wall backwards towards the lateral sinus. The latter was then laid bare and was found to contain a firm, palish-grey clot; pus also welled up between the wall of the sinus and its bony groove. The sinus was slit up and the clot removed from both ends until free hæmorrhage occurred from the upper portion. There was no reflux from the lower or jugular end, but it was possible by free removal of bone to pass a sharp spoon as far as the sinus of the jugular vein, and by this means a region of healthy thrombus was reached.

A strip of iodoform gauze was packed into the torcular end of the sinus, iodoform insufflated freely over the wound in its walls, the meatus was slit up, the posterior wall being sewn up against the skin flap, and, the bony cavity of the complete operation having been packed, the skin wound was completely sutured except in the lower third of its extent.

The operation was performed at 5.30 P.M., August 8th,

and during the night the temperature fell to normal. The packing from the sinus and internal wound of the bone was removed on August 11th, three days after the operation. A light packing of gauze was then inserted.

During the following days there was still tenderness on pressure over the cervical swelling, and the temperature at night rose to between 100 and 101 degrees. August 15th, firm pressure over the cervical swelling caused a flow of about ʒij of pus from the upper end of the jugular portion of the divided sinus. The evening rise of temperature ceased in the course of two or three days and the patient made a complete and rapid recovery. The facts that there had been no rigors and that an aseptic region of thrombus had been reached in the lower portion of the divided sinus seemed to indicate that ligation of the internal jugular was unnecessary—an opinion which was justified by the subsequent course of events.

Case of rapidly growing small spheroidal-celled carcinoma of the external auditory meatus.

By Francis C. Abbott.

E. M., a woman, *æt.* 52, was first seen on October 31st, and came into St. Thomas's Hospital, on November 12th, 1901, through the courtesy of Mr. H. B. Robinson.

There had never to her knowledge been previous discharge from either ear, and the hearing had always been good. She had two children living and had had two miscarriages.

The present illness dated from eleven months ago, when she first felt pain in her right ear which she described as "not bad, but irritating." The concha soon became very tender.

About two weeks after the first onset of pain she discovered a small lump, like a wart, on the upper and posterior edge of the meatus. This little lump had a black head and was painful, so she went for advice to Golden Square Hospital.

Here, she said, the lump was cut; she was given some lotion to syringe the ear with, some ointment, and medicine.

She attended as an out-patient for nearly three months, during which time fresh growth appeared around the edges of the little incision, which looked black. At that time there was no surrounding swelling.

Eight weeks ago the local growth had extended and protruded from the meatus like a little lump of flesh, and there was more pain. Swelling by this time had been noticed above and behind the ear, and now a small lump appeared on this.

For this she came to St. Thomas's, and as the swelling fluctuated it was unfortunately incised in the casualty department.

Some clear fluid and blood were evacuated, and she was given some lotion to dress it with. Very shortly after the growth began to fungate from this incision, and there was occasionally a good deal of oozing of dark and clotted blood, the fluctuating area at the same time extending. For this she was sent to Mr. Robinson's out-patient room, and he kindly handed on the case to the aural department.

At that time, one month ago, the fluctuating swelling lay above and behind the auricle, which it pushed downwards and forwards. It was about 2 inches across and resembled a large mastoid abscess, but growth could be felt in its lower part.

The two rosette-like fungations were present, but were decidedly smaller than at the present time, and the upper one was situated more posteriorly.

The meatus could be made out in the lower forepart of the lower rosette, but was already entirely surrounded by growth. It was quite five months after the appearance of the first little wart before any swelling was noticed behind the ear, and at this time a very clear fluid first began to escape from the meatus.

For six months she had been unable to sleep at night, but at first the pain did not seem bad enough to her to account for her sleeplessness. She had not noticed any marked deafness, and had only occasionally suffered from loud noises in this ear. These she describes as "like a dove." There had been no giddiness throughout.

Present state.—The woman looked very ill, was of very bad colour, and her face was worn with pain.

The right side of the head was almost entirely covered over by a large swelling, smooth in outline and roughly ovoid, the long axis of which was from before backwards.

The swelling extended from the external angular process of the frontal bone in front to midway between the back of the ear and the external occipital protuberance behind. Its length in this direction was $6\frac{3}{4}$ inches.

Above it reached from midway between the vertex and the top of the auricle down to the upper edge of the lobule of the ear, and in that direction measured $5\frac{1}{3}$ inches.

The whole auricle was thrown downward, outward and forward by the tumour, being an exaggeration of the usual position taken by it when there is a large abscess over the mastoid. From this cause the width from the midline of the head to the top of the auricle was $5\frac{1}{2}$ inches on the diseased side as compared to $3\frac{3}{4}$ inches on the sound side.

The lower edge of the lobule was so far depressed that it was on a level with the mouth.

The main bulk of the swelling was formed by a bulging bag of fluid, moderately tense, with no impulse on coughing in it, and with no perceptible pulsation.

The lower part of the swelling on the other hand, especially that portion behind the auricle, was certainly solid, and growth could be felt in one or two other places by dipping sharply through the sac of fluid.

On the surface of the tumour two large rosettes of sprouting growth presented themselves.

They had similar characters, consisting of heaped-up growth, like protuberant granulations, they were markedly rolled out and everted at the edges, and were deeply flanged, both sides of the deep sulcus so formed being covered by skin. They bled very easily when touched and handled.

The lower rosette was $2\frac{1}{4}$ inches in diameter, occupied the depression of the concha, and entirely surrounded and had destroyed all traces of the meatus and tragus.

Fig. IV.

Glandular celled Carcinoma of Ear. The plate shows the downward and outward displacement of the auricle, and part of the extensive swelling on the side of the head. The two masses of growth with everted edges sprout from the meatus and the incision made behind the auricle, respectively.

Mr. F. C. Abbott's Case, shewn 2 Dec., 1901.

The upper rosette was situated above and behind the auricle, which it did not involve although it overlapped it from above. The diameter of that one was 1½ inches.

From the centre of each of these rosettes, a slightly viscid, almost clear, yellowish fluid constantly exuded, and could be made to flow quite rapidly by pressing on the fluid part of the swelling; as much as a test-tube full being easily collected in this way at any time.

The fluid had sp. gr. 1,022, contained some albumin, no trace of a reducing agent could be discovered, but some blood and pus cells were seen on microscopic examination.

The skin over the whole swelling was bluish and a few large veins were seen coursing over it. No glands could be felt either in the neck, parotid, or occipital regions.

There was slight weakness of the whole of the right side of the face, very slight as a rule, but more noticeable at some times than at others.

The woman suffered from great local pain about the ear, as well as from much general headache; the pain was always much worse at night, and sleep could only be obtained by the free use of morphia.

There were no signs of secondary growths elsewhere.

On microscopic examination of a piece of the growth removed for examination, it was seen to be a small spheroidal-celled carcinoma. There was a large proportion of the cellular as against the fibrous elements, and the cells were small, resembling those of a rodent ulcer. They were not arranged in definite alveoli.

The microscopic appearances bore out the suggestion from the clinical history that the growth originated in some of the glands of the deeper part of the cartilaginous meatus. The fact that the carcinoma had commenced without the occurrence of any previous discharge from the tympanum, and that it was not a squamous carcinoma, as well as the very large collection of rapidly reaccumulating fluid, made the case a very unusual one.

The large amount of the fluid appeared to Mr. Abbott to render it probable that it was cerebro-spinal fluid, derived

from a small erosion through the petrous bone and opening in the dura mater. If that was so it must be much altered by septic contamination. Its large quantity and rapidity of secretion seemed to preclude its arising from the internal ear or from the breaking down of the growth itself.

No idea of active treatment was entertained.

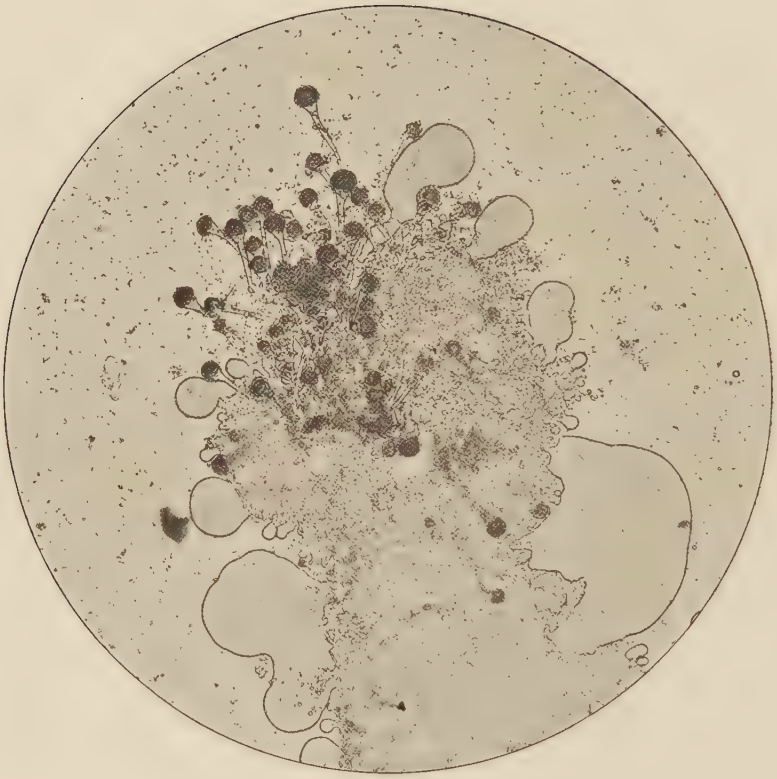
A case in which an abnormal membrane was present in the osseous meatus.

By Arthur H. Cheatle.

G. C., *æt.* 20 years, came to King's College Hospital on November 21st, 1901, complaining of deafness in both ears, the left being the worse, and also of discharge from the left. Fifteen years ago, after measles, the left ear began to discharge, and had done so, off and on, ever since. The right ear had never discharged, and he said he had never had earache pain, or any operation or injury on that side, and it had never been syringed, but it began to get deaf four years previously, "when he was unable to breathe through his nose"; he was at that time taken to Golden Square, where his adenoids were removed.

On examination a flaccid bluish-grey membrane stretched wholly across the osseous meatus, 1 inch from the tragus with the auricle undisturbed. On depressing the membrane with a Siegle's speculum he could bulge it out again by performing Valsalva's experiment. On catheterisation a normal sound was heard. On the left side there was large loss of the membrane, only a rim at the top remaining, and the handle of the malleus was lost. The measurement, from where the drum should be to the tip of the tragus was $1\frac{1}{4}$ in. $\frac{\text{W. R. 1 in.}}{\text{2 ft. L. } \frac{1}{4} \text{ in.}}$ The tuning-fork showed "middle ear" on both sides. The nose was narrow, there were slight remains of adenoids with adhesions passing across Rosenmüller's fossæ.

Fig. V.



Aspergillus Fumigatus.

x 150 diam.

Fig. VI.

Aspergillus Niger.

x 150 diam.

Specimen of aspergillus.

By URBAN PRITCHARD.

A specimen of aspergillus niger removed from the meatus of a gentleman on October 15th, 1902.

He had been complaining of pain in the ear, and repeated accumulations in spite of frequent and thorough removal by syringing.

On examination, the meatus was seen to be partially filled with a black mass; on syringing and examination this mass was found to consist almost entirely of aspergillus niger. The specimen, which was mounted in glycerine, showed the mycelium, hyphæ, fructification and spores so perfectly, that Dr. Pritchard thought it would be of interest to the members of the Society.

The case was treated with injections of perchloride of mercury (1 in 1,500), followed by instillations of an alcoholic solution of the perchloride (1 in 1,000), and at the end of fourteen days no signs of the fungus could be found by the microscope. The microphotographs of this specimen and one of aspergillus fumigatus, both × 150 diams., showed the comparative size and shape of the fructifications.

Specimen of tuberculous disease of the temporal bone.

By C. H. FAGGE.

A. O., *æt.* 13, no family history of consumption or other tuberculous lesions. Healthy until nine, when she had scarlet fever. After this right otorrhœa began and persisted though she attended Guy's Hospital, where polypi were removed and antiseptic syringing carried on consistently. In July, 1900, she had for a few days right facial paralysis, and a second attack followed in August; when seen again in September there was no paralysis, but an indistinct hard swelling was made out below the right lobule, and the otorrhœa was undiminished. On September 7th, in the Evelina Hospital for Children the radical operation was per-

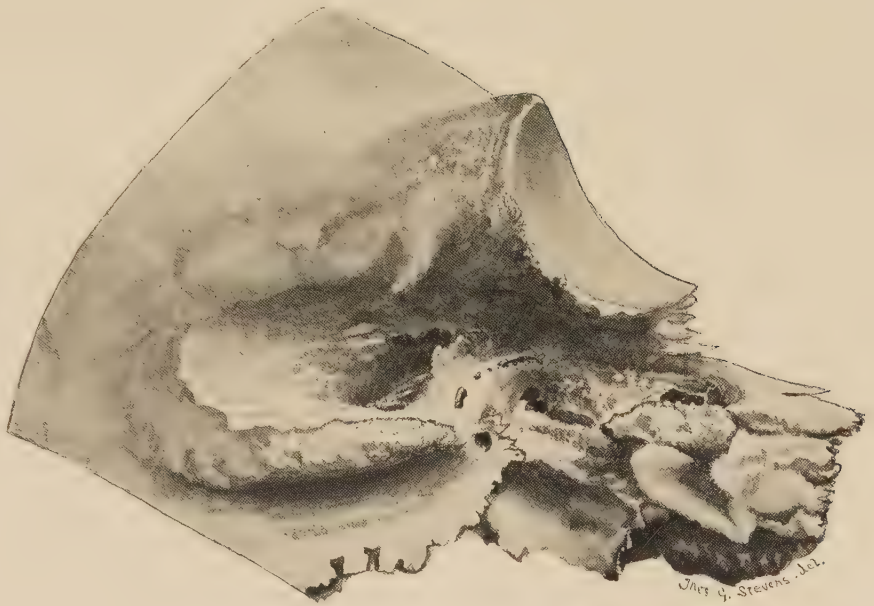
formed on the right side, on cutting down on the swelling below the ear, a circumscribed abscess was found connected with the middle ear by a sinus piercing the outer half of the floor of the middle ear, this was curetted out, and some bone between the abscess and the middle ear removed, the cavity being allowed to granulate. This sinus healed early in October, but as the middle ear became covered with epithelium, it reopened and discharged watery pus once or twice. In March 1901 there were still granulations on the floor of the middle ear.

About Whitsuntide, 1901, when not under observation, right facial paralysis again set in, and the middle ear suppuration again was set up, Mr. ABBOTT in Mr. FAGGE'S absence abroad, kindly admitted her, and opening the post-auricular scar curetted the whole area; the child was now very thin and pale, and suffering from enlarged right cervical glands. Mr. Abbott diagnosed a generalising tuberculosis because of remittent temperature 102·8–97° and optic neuritis. In July 1901, as the glandular enlargement had much increased, and although patient's general health had again improved, the enlarged glands were excised, the sterno-mastoid being divided. Many of the glands were suppurating, and in parts showed discrete tuberculous foci. Her temperature ranged between 103–98°, the optic neuritis was less marked; but though she ate and slept well, she gradually wasted. On August 26th (thirty-three days after operation), she had a convulsive seizure with unconsciousness and some twitching of the left side of the face. On the 29th double optic neuritis was well marked, and there were numerous adventitious sounds in chest. Temperature 104–97°. September 2nd patient died, having been unconscious for the last twenty-four hours.

At the autopsy we found tuberculous enteritis and tabes mesenterica, general miliary tuberculosis of the lungs and meninges.

The right temporal bone showed a smooth bone cavity resulting from the radical operation. The facial canal was opened in its descending limb, the promontory was carious, exposing the first turn of the cochlea, and a large portion of the carotid canal was opened up.

Fig. VII.



Tuberculous Disease of Temporal Bone, showing Erosion of Jugular Fossa, Carotid Canal, and Facial Aqueduct.

SEVENTH ORDINARY MEETING.

Monday, February 3rd, 1902.

The President, Professor URBAN PRITCHARD, in the Chair.

The following gentlemen were elected Members of the Society:

Charles A. Parker, William A. McKeown, James Kerr Love, Herbert Furnivall Waterhouse, H. M. Masina, Albert A. Gray.

The following gentlemen were nominated for election at the next meeting:

Edward Deanesly, M.D., F.R.C.S., 4 Waterloo Road, Wolverhampton.

William H. Kelson, M.D., F.R.C.S., 16 Old Burlington Street, W.

Frederick Vasey Adams, F.F.P.S.(Glasg.), 10 Queen's Crescent, Glasgow.

Frederick Spicer, M.D.(Dur.), 17 Wimpole St., W.

Professor Urban Pritchard then read his Presidential Address as follows:

Gentlemen,—I have first to tender to you my heartfelt thanks for electing me to be your President for the coming year. I need hardly say that I feel it to be a great honour thus to be called upon to preside over the deliberations of this Society; and I can only assure you that I will do my very best to promote its welfare and to maintain the prestige already gained for the office by my eminent predecessor.

Gentlemen, our Society, though hardly yet out of the

stage of its infancy, has already more than justified its existence; and indeed, when we remember the interesting and valuable meetings of the two sessions already held, the only wonder—in my mind—is that such an association was not started many years ago.

But though there is little doubt that the successful formation of our Society is largely due to the fact that workers in Otology had come to feel the necessity for some such union, yet it must be remembered that the mere *desire* for association is not enough. In the words of an American poet we might have then exclaimed:

> "The lamp of the Beginning waits to burn
> In every breast";

but "Whence may we bring the fire?" he goes on to ask. The wish needed to be carried out. Had there been no one ready to trim and light the lamp, aye, and to see that it was kept burning too, our Society could never have been lighted into being, nor, having been lighted, could its flame have maintained its steady glow.

Fortunately for us, however, we had, among our number, men who were able and willing to do this.

Mr. Cumberbatch, as Treasurer, may be said to have taken charge of the oil, nay, even more than this, to have filled the lamp at first partly from his own store.

But on Mr. Ballance, Mr. Cheatle, and Dr. Milligan, our energetic and devoted Secretaries, the main burden of the undertaking has fallen, for they have had to keep the lamp in working order; and I think we may fairly say that no vestal virgin ever laboured with more patient and unwearied zeal over her charge than they have done over theirs.

And to carry out the simile, may we not say of our first President, Sir William Dalby, that he has added to the light fragments from his rich store of knowledge and experience, which, like the addition of hydrocarbon to gas, has greatly increased its powers of illumination and brilliancy.

To all these gentleman, therefore, I desire, both in your name and in my own, to tender hearty thanks for the work

they have done, and to express our warmest appreciation of the excellent way in which they have piloted the Society through the first two years of its existence.

Our Society, as you are all aware, is an outcome of the International Otological Congress held here in London in 1899. The question of qualification for membership was a difficult one. After careful consideration it was thought advisable not to throw it open to every member of the medical profession, but to limit it to those who had made otology a subject of special study; and this decision, though it has been attended by some difficulties, has, on the whole, been found to have been justified by experience.

The response to our proposals was most gratifying, for it enabled our Society to start with no fewer than fifty-seven original members, while since then twenty-five more names have been added to its roll. We regret, however, to have to report the death of one member, Mr. George Stone, of Liverpool, and the loss of another, who has resigned.

During the two sessions seven meetings have been held in London and one in Edinburgh, all of which have been well attended, and the average number of members present has steadily increased. The meetings held in London have been distinctly practical in their nature; many valuable clinical cases have been shown, and numerous microscopic and other specimens exhibited. At Edinburgh the members had the privilege of hearing a most instructive paper by Mr. CHARLES BALLANCE on "The Operative Treatment of Abscess when situated in the Brain."

It has been necessary from time to time to make some few alterations in the rules and regulations framed at the commencement. Among the latter I may mention that, at the meeting of Council just held, it has been decided to make some slight change in the conduct of the ordinary meetings. For the convenience of patients, and in order to save confusion and loss of time, it has been decided to have the demonstrations of patients and the microscopical exhibitions before the PRESIDENT takes the chair for ordinary business.

Two volumes of *Transactions* have been published. I

think we may fairly congratulate ourselves on the matter therein contained, and unquestionably we may congratulate our Honorary Secretaries on the able way in which the volumes have been edited and brought out. It is a great satisfaction to us all, I am sure, that we have now appointed Mr. ARTHUR CHEATLE to the new post of Editor of the *Transactions*. The main part of the work of the two first volumes fell to his share, and in the excellence of these we have the surest augury for the future annals being well and faithfully preserved.

And now, gentlemen, that we have taken a survey over our short past history, may we cast just one glance forward.

I own I should like to see our programme still more varied in the future. For instance, there seems to me to be a remarkable unanimity among our members in their avoidance of those difficult problems which are every day brought so prominently before us in connection with non-suppurative disease of the middle ear. Here is a splendid field open, more especially for our younger members. For instance, will not some of them strive to find a solution to that problem—which is the bugbear of our speciality—namely, the condition which, for want of a better name, we call sclerosis? To him who could devise some really effective treatment for this sad condition how grateful we should be; for is there anything more painful—and even, may I say, more humiliating—than the feeling that we cannot help those who come to us to be relieved from their suffering simply because our knowledge is not yet sufficiently advanced.

Lastly, gentlemen, may the earnestness of our desire "to ease the burden of the world" give us fresh zeal, fresh courage, and fresh patience in the prosecution of our studies on the one hand; while, on the other, may this same desire prevent us from overlooking good of "our patient" in our interest in "the case," and ever lead us into the path of sympathy with the sufferer, for herein alone lies the true secret of perfect success.

A case of membrane stretching across the deep meatus. Shown at the last meeting.

By Arthur H. Cheatle.

Shortly after the last meeting the membrane was removed under chloroform. After removal the middle ear could be clearly seen, at least a quarter of an inch deeper. The whole of the membrana tensa was lost, with the handle of the malleus cleanly dissected out, and the incus, stapes, and stapedius muscle plainly showing. The middle ear was dry. The inference then was that the membrane had formed as the result of suppurative disease.

Since the removal the patient had absented himself from the hospital, owing to his business, and was not seen again until about ten days before the meeting, when a granulation was seen springing from the upper part. The granulation was removed under gas. The hearing was increased by the removal of the membrane.

Case of acute Bezold's mastoiditis, with extra dural abscess.

By Richard Lake.

J. D., *æt.* 48, male, presented himself on November 27th, 1901, complaining of slight pain behind the ear, with a discharge. He had some swelling over the mastoid. The ear projected slightly on that side, and there was also swelling in the upper part of the neck and up to the upper part of the sterno-mastoid muscle.

On examining the ear a red bulging of the posterior fold of the membrane was observed. There was acute tenderness all over the mastoid process, perhaps, more marked over the site of the antrum.

The history of the case, as supplied by Dr. M. Coghlan, was that the patient called at his house on November 27th, complaining of slight pain and discharge from the ear. The pain, he stated, had been present for two weeks, and he had treated himself by poulticing the ear until an abscess

discharged two days previously. The patient was given an antiseptic lotion. He was seen by Dr. COGHLAN only twice more, but on the last occasion he complained very much of pain in the head, and tenderness and œdema over the mastoid process were found. The patient was then informed that immediate operation was necessary. His temperature on admission to hospital was 97° and his pulse rate 80. The operation was performed on the following day, December 19th. On removing the dressing the external meatus was found full of greenish pus, and the swelling in the neck had largely diminished. The usual post-aural incision was made and the whole of the mastoid process exposed; on removal of its cortex, the subjacent parts presented the appearance of a honeycomb, the process being entirely made up of air cells, which without exception were full of pus. On working inwards, pus was found coming from the groove for the sigmoid sinus, and was also traced into the digastric fossa. Almost the whole of the mastoid process was removed right down to the tip, leaving only the anterior margin; and the bone was removed entirely up to a level with the external edge of the posterior border of the meatus, and cells containing pus were followed some way into the base of the zygoma. No communication could be made out between the middle ear and this large operation cavity, which must have included the site of the antrum, consequently an artificial tract was made so that the ear could be thoroughly irrigated. An incision was made in the membrana tympani and comunication established. The wound was thoroughly disinfected, but left open at its lower part for the introduction of the necessary packing. There never was any subsequent discharge from the ear, and all that is to be seen on inspection of the membrane is a small scar close behind the handle of the malleus. The hearing for conversation on that side was to all intents and purposes normal.

The wound had now, that is to say, six weeks and a half after the operation, been entirely closed for twenty-four hours.

Mr. WAGGETT asked whether other members had noticed a very early symptom in Bezold's phenomenon, namely,

tenderness at the posterior end of the digastric groove. He had recorded such a case in which the symptoms pointed to phlebitis of the mastoid vein; but subsequent events proved it was the commencement of a leakage into the digastric groove. He had operated, and so had been able to demonstrate the exact anatomy of the condition. When he read his paper he asked whether any one else had noticed the symptom just mentioned, but got no answer.

Mr. Ballance said he had noticed the symptom to which Mr. Waggett had called attention, and had seen several such cases. The chief point about Mr. Lake's case of Bezold's mastoiditis was that perfect hearing power was preserved. In all acute cases of mastoid suppuration, recovery of the hearing power, since the tympanic cavity was not interfered with during the operation, should be the aim of the surgeon. A very extensive operation was sometimes required in acute cases; and occasionally the whole mastoid, except the inner cortical layer, has to be removed. The cells in the roof of the bony meatus should be opened, and, if necessary, the sinus groove, because pus may be found there also. Nevertheless, the subsequent healing of the tympanum was often most satisfactory, and the recovery of hearing truly remarkable.

A case of double sub-dural abscess. Secondary pyæmic symptoms after operation. Lateral sinus and brain explored. Recovery.

By Hemington Pegler and Richard Lake.

W. I., male, *æt.* 26 years, was admitted into the Metropolitan Ear, Nose, and Throat Hospital on November 5th, 1901, suffering with continuous and excruciating pain on the right side of the head close above and behind the ear.

He gave a history of discharge from the right ear since he was two years of age. When he was six he had an attack of measles which was accompanied by a temporary paralysis of the right side. He had obstruction of the bowels

at the age of 13, and had suffered a good deal with constipation since. He had always complained of pains in the head. There was a strong family history of phthisis on the mother's side, whilst an uncle had died from a tumour on the brain, and one brother had died of phthisis.

On admission his temperature was 100·4° and his pulse was 68. The membrana tympani was entirely destroyed and the cavity of the tympanum lined with a moist but white epithelium. He was also suffering with constipation.

From these symptoms the diagnosis of extra-dural abscess was made. He was operated upon early the next afternoon, at which time the temperature had risen to 102°. The groove for the lateral sinus was first opened and a small collection of pus was found between the sinus and the bone. This pus was of creamy consistence and white in colour. As it was considered that this would not suffice to account for the symptoms, the bone was removed upwards so that the middle fossa was entered, where a second collection of pus was found coming from the posterior border of the superior aspect of the temporal bone. This pus was yellow, offensive, and stringy. The lateral sinus looked quite healthy, and besides there had been nothing to cause any suspicion as to its involvement. The radical operation was also performed, the posterior wall of the cartilaginous meatus being entirely removed. The large cavity was plugged and the posterior aural wound closed.

The temperature rapidly fell to normal, but rose again in the afternoon to 106·4°, when the wound was dressed. From this time onwards for nine days the patient had a normal temperature, but he still complained of headache to a considerable extent, and also constipation was marked. The patient continued gradually to lose flesh.

On November 17th, at 10.30 P.M., the temperature was 101·4°. The patient then had a rigor, and the temperature continued to rise until it reached 104°. This came down during the night to 102°. During this time he passed several small quantities of blood by the bowel. His pulse rate went up to 160. The temperature gradually fell to

101·5° by the evening of the 19th, at which time anti-streptococcic injections were commenced. He had one injection of 10 cc. at 9 P.M. ; another of 10 cc. at 12.15 A.M., and the temperature fell in the morning to normal. In the afternoon, however, it rose again to 100·4°, and the patient had two serum injections of 10 cc. each before midday, and one more of the same amount in the evening. His pulse rate during this time kept down to slightly above 80. Shortly after midnight, on the morning of the 21st, the patient had a rigor with his temperature rising rapidly to 104·5° by 1.30 A.M. This fell by 7.45 A.M. nearly to normal, but commenced to rise again.

A second operation was then decided upon. The old wound was reopened and the lateral sinus freely exposed by enlarging the bony opening to about an inch and a half, no sign of pus was found, either at that situation or in any other part of the original bony wound. A trochar and cannula were passed obliquely into the lateral sinus, and fluid blood flowed out with about normal force. The sinus was compressed and the opening in the middle fossa enlarged. The dura mater was divided crucially and the lateral lobe of the cerebrum carefully explored with absolutely negative result. An incision was then carried from the upper part of the post-aural wound backwards and downwards to midway between the occiput and mastoid process. The tissues were reflected and a disc of bone removed over the lateral aspect of the cerebellum, the right lobe of which was subjected to a careful examination, also with an absolutely negative result. The flaps of the dura mater were sewn together, the tissues replaced and the wound was closed.

On account of the negative result of all exploratory procedures it was decided to further investigate the condition of the lateral sinus, which was slit up for about an inch. Blood welled out with considerable force and rapidity. This was checked by plugging above and below, between the sinus and the bone. The middle fossa dura mater was closed with sutures and the wound plugged.

The patient, after being put back to bed, was bathed in perspiration, but his pulse rate and temperature gradually fell until the 24th, when his temperature rose to 103·2°, but without a rigor. It again rose on the 25th to 102·8°, but fell again, after which date no subsequent rise of temperature occurred, while the pulse rate gradually came down to about 80, at which it has remained. He commenced to put on flesh rapidly. The *tâche cérébrale,* which had been present during the early part of his illness, disappeared, and he gradually lost his headache.

It should have been noted that a careful examination of the optic discs on more than one occasion failed to reveal anything abnormal.

The patient's progress towards recovery was uninterrupted and entirely without any features of interest, but, on account of the large amount of tissue lost, healing had been rather tedious, and the edges of the flaps became inverted, which necessitated, a short time since, a small plastic operation in order to bring them into apposition. This, however, as was to be seen, had been successfully accomplished. The patient had now been following his employment as a newsagent for the last six weeks.

Mr. Cheatle asked what was the precise meaning of rigors, as regards diagnosis, in ear cases? He recently had two cases which puzzled him a good deal, and upset his ideas of rigors in connection with middle ear suppuration. A short time ago a child, *æt.* 9, was admitted to King's College Hospital with acute otitis. The child had two rigors, with a temperature of 106°. He operated and exposed the lateral sinus, but found nothing. Later there was another rigor; nothing further was done, and the child got well. Shortly afterwards he was called to see a case in the country with the same history—two rigors, a temperature of 106°, and the boy got well without operation. In both cases the patient was put on anti-streptococcic serum.

Dr. Bronner asked whether the walls of the lateral sinus were affected. Cases were not uncommon in which there was

a free passage of blood, but the walls were diseased, and these caused septic-æmia, etc. It was therefore often necessary to open the sinus and plug it, although there was free circulation.

Mr. CUMBERBATCH agreed with what had been said by Mr. CHEATLE as to rigors in such cases. Within six months of each other he had two patients recently who had a very similar condition. In one he did not open the lateral sinus, and the patient got well. In the other the jugular vein was tied and the lateral sinus opened, and the patient died.

The PRESIDENT said he had seen the condition mentioned by Dr. BRONNER, and he had been struck with the absolute importance of opening the lateral sinus if there was any suspicion of it infecting the lungs. He recalled a case very many years ago, in those days when such conditions were not opened up thoroughly, where at the post-mortem there was found a little patch of clot on one side of the lateral sinus inside. The blood passing over that washed the infection into the lungs. With regard to rigors, going back to pre-mastoid times, he remembered a case in which a girl had most severe rigors. He took the patient into the hospital and simply opened the mastoid by the then usual method of drilling. She got quite well.

A case in which the complete post-aural operation was done without grafting, and with great improvement in the hearing power.

By MACLEOD YEARSLEY.

This case was shown, not because it was anything out of the ordinary, but because of certain remarks which were made at the last meeting of the Society upon the result of the radical mastoid operation as regards the hearing.

The patient was a girl, aged 22 years, who came to the Royal Ear Hospital on February 27th, 1901. She had had a discharge from the right ear for "some years," and had attended at a general hospital when she was fourteen. For the year preceding her appearance she had suffered from pain and deafness. There was severe headache,

especially frontal and in the right side of the head. She could not lie on the right ear at night on account of the pain. She had fairly frequent attacks of vertigo, especially when attending to her cooking range. These attacks began with ringing tinnitis, and were characterised by a tendency to fall forwards, and the apparent movement of objects from right to left. She was irritable and depressed.

On examination her hearing power in the right ear was $3\frac{1}{2}$ in. for the acoumeter, 5 in. for a whisper. The tuning-fork on the vertex was referred to the right ear and showed middle ear deafness. Bone conduction was perfect.

The right mastoid was tender on percussion. There was vertigo on syringing, the temperature was 99·0°, and there was right nystagmus. There was no superior posterior bulging of the meatal wall, but a large posterior perforation was seen, the upper part of which was blocked by cholesteatomatous material apparently coming from the attic. There were two small granulations at the lower part of the perforation.

The patient was anæsthetised on March 5th, and the complete post-aural operation was performed with the assistance of Mr. CHEATLE. The antrum was easily reached by the chisel. No cholesteatoma was found, save the mass seen by the speculum. The carious incus and malleus were removed and were shown, together with a small sequestrum, apparently the pyramid. The external semicircular canal was found to be practically dissected out by caries. The whole middle ear, antrum, and aditus were carefully curetted, the usual meatal flap fashioned, the cavity packed with gauze *viâ* the meatus, and the wound sutured.

The subsequent dressing consisted in carefully packing, *viâ* the meatus. On March 28th, the hearing was tested and found to be 83 in. for the acoumeter and 2 feet for the whisper. By April 22nd, there was only a slight moisture from the anterior inferior part of the tympanum.

The hearing was as follows :—Acoumeter 104 in., whisper 39 in. The ear was quite dry, and she had had no discharge, pain, headache, or vertigo since the treatment ceased.

She had greatly improved in general health since the

operation. Nystagmus disappeared the day after the operation, and had not appeared since.

The introduction of grafting in the radical operation was an undoubted improvement in the technique, and greatly shortened the after-treatment. But, whilst not in the least attempting to detract from its value, he pointed out that it was not to grafting that success in these cases was due. Whether the cavity be grafted or not, unless the original operation was done with care and the whole of the disease eradicated, the result would be failure.

Dr. MILLIGAN said when he showed his case, which was the one to which Mr. YEARSLEY evidently referred, he did not say that the extremely good hearing was necessarily due to the grafting. He showed it as a successful case of grafting in which the hearing was very much improved. The success of the grafting operation depended upon very complete removal of all the disease; the more completely one freed the middle ear from disease, the more likely would the hearing power be improved afterwards. After any complete post-aural operation the hearing power might be improved, on account of the free curettage the middle ear was subjected to, especially in the region of the stapedio-vestibular articulation. It was suggested by one of the Members last time that possibly the free opening up of the cavity had something to do with the improved hearing power. The discussion had practically closed, or he would have raised an objection to that, because in the case of a ceruminous accumulation in the external meatus, so long as there was the least aperture through which sound waves could enter hearing was preserved, but the moment that aperture was closed, deafness came on. The reason seemed to be the one already given. In Mr. YEARSLEY'S case he noticed that there was exposed mucous membrane of the middle ear, and possibly if the case had been grafted, that part might have been covered, and the result would then have been still better than at present.

Mr. YEARSLEY explained that he did not refer to Dr. MILLIGAN'S case shown at the last meeting, but to the

remarks of another Member, whose name he could not remember.

A case of cerebral abscess with unusual features. Operation. Recovery.

By Dundas Grant.

Lilian H., *æt.* 18, employed in the City, was brought to the Central London Throat and Ear Hospital on February 21st, 1901, in a state of violent excitement, complaining of extreme pain in the left frontal region, and begging us to "cut her head open." She expressed horror and fear of another patient in the ward, and screamed to us to "take her away from that devil." Her mental condition was very suggestive of that of a person in delirium tremens. When she was placed in bed she turned on her left side, probably to avoid the light, of which she had an extreme dread. The head was somewhat retracted and the knees drawn up and rather stiff. She was constantly yawning. The face was markedly expressionless. The knee-jerks, especially the left one, were exaggerated, and ankle-clonus was present on the right (opposite) side. Temperature was 97·2°, pulse 64, and respiration 16. Her previous history was to the effect that she had had a discharge from the ear two and a half years previously, on account of which she attended the hospital. Adenoids were then removed and tuberculosis was suspected; but the result of cultivation and bacteriological examination was not recorded. Fourteen days before admission on the present occasion she began to feel languid and suffered from frontal and occipital headache. Five days before admission she was seized with faintness and she vomited, and was severely sick the night before admission. She had been somewhat confused for five days, especially the last two; photophobia had lasted for two days. Since her previous attendance at the hospital she was unaware of anything being the matter with her ear, and the discharge only began again two days before the recent admission, after syringing the ear. On admission the aspect of the case suggested

cerebral irritation or meningitis rather than abscess, although the sub-normal temperature was in favour of the latter.

The radical mastoid operation was at once performed, a quantity of granulation tissue and cholesteatomatous material being evacuated. The opening was continued into the groove for the lateral sinus, where, however, no pus in any direction was discovered in connection with the cranial cavity. At night the temperature was 100·4°, pulse 84, respirations 24. It was reported that the patient had been sick during the night. She continued yawning. The photophobia and retraction of the head were more marked, and the ankle-clonus and knee-jerks were as before, but less marked; temperature 97·4°, pulse 60, respirations 18. A lumbar puncture was performed between the fourth and fifth lumbar vertebræ, but no fluid escaped. Free exploration was then decided on, and in the absence of any localising symptoms it was thought best to explore the cerebellum in the first instance. On removal of the disc of bone the dura bulged freely, and a number 3 trocar was introduced several times, but no pus was found. There was, however, a copious flow of cerebrospinal fluid when the dura mater was incised. The dura mater was stitched and the soft parts replaced, and another trephining opening was made in the squamous bone above the external auditory meatus. The dura bulged; it was incised, and then a trocar was introduced. Fœtid pus to the amount of about half an ounce escaped, and the finger introduced into the abscess cavity found the walls to be of soft consistency, collapsing completely upon the exploring finger. A thick indiarubber drainage-tube was introduced into the cavity, and very gentle irrigation with boracic lotion was practised by means of a fine pointed syringe, the tip of which was introduced for a very short distance into the drainage-tube. (The pus, which was intensely fœtid, was found to contain tubercle bacilli in large quantity.) The patient was returned to bed and appeared very cold, but soon got warmer. She was given an enema containing brandy and beef-tea. At night her highest temperature

was 100·4°, pulse 100, respirations 24. On recovery from the chloroform she was freer from pain.

On the 23rd the patient was not sick during the night, and her general appearance had improved. The photophobia was still marked and her head was still retracted. There was some stuffiness of the nose; ankle-clonus and knee-jerks were less marked. She took milk and beef-tea by the mouth well and in considerable quantity. The wound was dressed, small sloughs removed, and the tube shortened and re-inserted. Temperature 98·4°, pulse 66, respirations 18, and at night, temperature 98·8°, pulse 84, respirations 20.

On the 24th she was better in every way. She could talk quite rationally, but moaned slightly; the photophobia was nearly gone; the knees were still flexed, but not fixed. The wound was redressed and the tube again shortened.

On the 28th, after daily dressing, the tube was reduced to a mere ring.

On March 1st the tube was removed, and there was no sign of slough and no fœtor.

On March 4th there was no photophobia, no headache, nor any other symptom; the bowels acted to a mild aperient; the wound was granulating brightly, and was moist, but free from fœtor; there was a slight pink granulating bulging at the site of the trephining.

The wound healed up perfectly, and the patient seemed quite well, with the exception of a certain childishness of intellect, which has gradually disappeared. The discharge from the middle ear persisted for about a couple of months, but when last seen it had quite dried up. No ophthalmoscopic examination was made at the time of the patient's admission on account of her excited condition and intense photophobia. Examination after the performance of the operation showed the fundus of each eye to be normal.

Dr. Dundas Grant inquired whether the mental state of excitement in this case is present to any degree of frequency in cases of cerebral abscess. It seems to contrast in many respects with the very typical symptoms in the case shown by himself and Mr. Ballance at the last meeting, and on

which Mr. BALLANCE operated successfully. The proximity of the abscess to the surface of the brain in the present case probably accounts for the readiness with which recovery followed the evacuation of the pus.

A case of cholesteatoma treated by the radical mastoid operation, with preservation of the lining membrane and with Körner's plastic flap.

By DUNDAS GRANT.

The case shown was that of a boy operated on in March, 1900, on account of cholesteatoma of the middle ear. The exhibitor thought it a suitable one for preserving the matrix lining the cholesteatoma cavity. The result was extremely good, inasmuch as the patient returned home a week after the operation and was reported at the end of another fortnight to be free from discharge.

The exhibitor brought him before the notice of the Society on February 4th, 1901, and had not seen him since.

Dr. MILLIGAN thought, in regard to Dr. GRANT'S last case, that it was a rather dangerous precedent to go from the Society, because the treatment seemed so contrary to accepted pathological knowledge. He asked Dr. GRANT to say more definitely what it was he left in this particular case? What was the "matrix" of cholesteatoma? What was the condition of the surface of the bone at the time of the operation? He (Dr. MILLIGAN) had always understood that cholesteatoma was the product of carious ulceration going on in the bone, or, at all events, that caries was a usual factor in its production; and that the so-called capsule of cholesteatoma was nothing more than epithelium which was gradually accumulating and being pressed up against the bone. He thought that cholesteatomatous material being left at all was an incentive to recurrence. In the case just shown he was not sure there was not some disease. There was a very suspicious spot on the remains of the posterior wall of the ridge, and

what looked like a heap of epithelium might in reality be a focus of caries still left.

Mr. BALLANCE said he wanted to know what Dr. GRANT meant by the matrix? Was it a healed surface, or an ulcerated surface, or both, from which cholesteatomatous material was excreted? He did not understand what Dr. GRANT intended to convey when he brought the subject before the Society previously, nor would he now without an answer to the question he had put.

Mr. YEARSLEY said he noticed a suspicious place on the remains of the posterior wall of the tympanum. He regarded the surface upon which the cholesteatomatous material accumulated as a part of the disease, and considered that it should therefore be removed.

Dr. GRANT said Dr. MILLIGAN had touched upon a very trenchant point, but he made a very large assumption, namely, that for cholesteatomatous masses to form it was necessary that there should be caries, and that cholesteatoma was an expression of caries. Was that a fact? He thought not.

Mr. BALLANCE said his question was: Was the matrix mentioned in the agenda a part of the healed surface of the body, or was it an ulcerated surface of the body? The ordinary cholesteatoma of the mastoid had no capsule. If the cholesteatoma came from the unhealed surface of the body, then they would agree, but it could not be called a matrix. Why introduce a new term?

Dr. GRANT said it was not a new term. He meant by it the lining membrane of the cholesteatoma cavity. He compared it to an ulcer which was dipping in. An ulcer eventually healed by the proliferation of epithelium from its edges, and hence it became covered with a sort of membrane, and one could imagine an ulcer which dipped in and was gradually healing from its edges by the extension of epithelium from those edges, until the whole surface was covered. That was an ordinary surgical observation. If the cavity, the walls of which had thus become covered, was one with a narrow neck, and there was any moisture inside

it, desquamation took place. That was what took place in the accessory cavity of the middle ear, and constituted the so-called cholesteatoma, or, to be precise, pseudo-cholesteatoma. That there was something which could be left behind as a membrane was absolutely certain, and if his hearers did not like to call it a matrix, as some writers on the subject did, it must be given some other name. It was a healing process, and if it could take place completely and stand still it would be perfect. It could not, however, stand still to any extent, because the physical conditions were not favourable, but they were made so when the cavity was laid open.

The PRESIDENT said he was sure it was the desire of the members to get at the bottom of that question. Did Dr. GRANT mean by matrix that lining membrane of the cavity which had been eaten out or pushed out by the pressure of the cholesteatoma, or did he mean the outside layer of the cholesteatomatous body itself?

Dr. GRANT replied that what the PRESIDENT first mentioned was exactly what he meant.

Mr. BALLANCE said the matter went beyond that, because Dr. GRANT said it was a benign growth, that it was a healing process, that it was the result of a benign process and was itself benign. If that were so, the best way, if that were possible, would be to call in a cholesteatoma instead of a surgeon. But he, Mr. BALLANCE, held the view that the process was not benign. That it might produce healing of part of a wound was true, but while cholesteatoma was growing the wound was not healed entirely. Therefore cholesteatoma should be removed. It was an excretion, not really a new growth. Of course the part which was healed did not need dealing with in any way surgically.

Mr. CHEATLE said he had been thinking of two cases shown at the first Session of the Society—one by Dr. TILLEY, and the other by the PRESIDENT, in both of which nature had stepped in and performed the operation in as good a manner as the surgeon. After removal of the cholesteatomatous mass, there was an entirely dry cavity, lined with epithelium. It was such that he understood Dr. GRANT to mean by the

matrix—a membrane left behind. But was it healthy? That could only be ascertained by watching cases. If the PRESIDENT, or Dr. TILLEY, had seen their cases since, and would report upon them, one would be better able to say whether they should be operated upon or not. He thought Mr. BALLANCE would not advise operation in those cases.

Mr. BALLANCE said those cases were illustrations of healing by nature. There were also cases in which nature had produced the discharge of a brain abscess and healed the wound, but in ordinary conversation we assume that common conditions are indicated, not rare ones. In the cases mentioned by Mr. CHEATLE, the surface of the body where the cholesteatoma was lying was completely healed. That was a condition in which, in his view, no cholesteatoma would form. The surface of the body when healed did not produce cholesteatoma. In the latter condition one saw a healed surface, but always also a partly unhealed surface, and that was what the surgeon had to deal with.

Mr. CHEATLE said his own idea was to arrive at some common ground on which Dr. GRANT and Mr. BALLANCE could agree, and apparently that had been found.

Dr. HERBERT TILLEY said that if any argument was going to be based upon the cases referred to by Mr. CHEATLE, one should know how far they were healed by nature, and how far by surgical intervention. Although the cavity in his case appeared to be dry and healthy, that result was not produced without burring away the bone with which the cholesteatoma had been in close contact, and rubbing in pure carbolic acid; a healthy surface had thus been produced. He thought cholesteatoma would not appear in that case again. But if he had only removed the cholesteatomatous mass and closed and packed the wound, in about two months' time it would have been found suppurating again, or granulations would have formed, and the original condition would have been reproduced. His case bore out what had been said, that cholesteatoma was the product of an unhealthy surface, and by removing that surface one obtained a successful result.

Mr. CHEATLE reminded Dr. TILLEY that he showed two cases, one of which he only syringed out. (*Vide* p. 24, vol. i. of the *Transactions.*)

Dr. TILLEY had forgotten the case referred to by Mr. CHEATLE, and thought that the remarks applied to a more recent case under his care.

The PRESIDENT said his case was simply syringed out, and as long as he saw it it continued in a fairly healthy condition. His opinion was that cholesteatomatous collections were always produced from an unhealthy surface, he did not say necessarily some little ulcerative point; and it continued to throw off scale upon scale, which formed a mass. Therefore it was most important that that surface should be, by some means, rendered healthy.

Mr. LAKE asked whether it was really an ulcerated surface. The idea of it being so was new to him. He believed that ulceration of surface epithelium was not necessarily a part of cholesteatoma. He suggested that some investigations should be undertaken by the Society by which the question could be settled, rather than fighting the question out with empty words without proof.

Mr. WAGGETT said he had a case in which a cholesteatomatous mass had been discharged spontaneously from both the right and left sides. On one side the cavity remained quite dry, with a glistening surface, and in the other desquamation was still proceeding. Whatever name was applied, he thought the process which was going on was analagous to that in a sebaceous cyst, where there was no ulceration, but an epithelial lining which excreted the products of its own growth. He thought that clear descriptions of the cases would be of more value than theoretical considerations upon the pathology. He could recall a case in which, at the end of operation for the ordinary form of cholesteatoma there was a glistening membrane, which he had hoped to preserve and to leave *in situ.* Accidentally a hook caught the membrane and it came away, when it floated in the lotion in the form of a delicate hollow shell. That it was

formed of the complete epithelial lining of a cavity there could be no doubt in that instance.

Dr. GRANT, in further reply, asked whether the members of the Society, in a case such as he had shown that day, at the end of two years would suggest that it should be reopened, scraped, and grafted, or treated in any other way than left alone? He did not consider that case was to be taken as a type for all cases, but it seemed to him that in it he had intervened at just the right moment, when nature was perhaps about to do later what it had done in Dr. TILLEY'S and Mr. WAGGETT'S cases. Mr. YEARSLEY had asked whether it was a disease which ought not to be removed. That turned merely upon the use of a word, and it begged the whole question; it was impossible to say yes or no to it.

Two curious aids to hearing.

By L. A. LAWRENCE.

(1) A pair of metal instruments for fitting accurately the pinna and meatus. Each had a shell-like resounding chamber attached. These were probably made some 100 years ago and apparently were of practically no use.

(2) A tortoiseshell instrument, consisting of a flat plate to fit behind the ear, and of the same sort of use as the hand placed in the same way. Connected with this was an anterior scale fitting over the tragus. The instrument was invented by an artist who was not in the least acquainted with any medical matters. He found that his own deafness was benefited thereby. His condition, however, was one of long continued purulent catarrh and extensive loss of the membrana tympani (both sides). In some few cases, chiefly of nerve deafness, the instrument was certainly productive of some extra hearing.

A specimen showing the relation of the facial nerve to the mastoid operation.

By Arthur H. Cheatle.

The specimen was dissected after the illustration in Macewen's book. The facial canal was opened throughout its course and painted red. Mr. Cheatle thought it was the best dissection for demonstrating the course of the nerve to students.

The use of adrenalin chloride in the mastoid operation.

By A. L. Whitehead.

The use of preparations of the suprarenal gland, and especially of adrenalin chloride in the performance of nasal operations was, he supposed, familiar to the members of the Society. Its remarkable powers as a hæmostatic suggested its uses during the second or epithelium grafting stage of the radical mastoid operation according to Mr. Ballance.

The persistent oozing which occurred in some cases caused the operation to be much prolonged. In these cases, he now, at once, packed the cavity with sterilised gauze moistened with adrenalin chloride solution (1 in 10,000). He then proceeded to cut the graft, and found, on returning to the mastoid wound, that there was a perfectly clean and dry cavity, this was washed out with saline solution, the graft placed in position, and the operation finished in the usual way. There was no reactionary hæmorrhage, and the graft adhered as well as in those cases in which the adrenalin chloride was not used. The saving of time was very marked, and where several operations of this character have to be performed in sequence was very valuable.

Mr. Mark Hovell said he could endorse the remarks with regard to the use of adrenalin chloride. Mr. Eve had been using it at the London Hospital, and it had been used for his cases for some months with very good results.

Notes of two cases of aural disease terminating fatally.

By A. L. Whitehead.

(1) M. F., female, *æt.* 27. Admitted into the hospital on December 12th, 1900.

Previous history.—Left otorrhœa from infancy, mastoid abscess seven years ago, burst spontaneously, leaving a sinus, from which pus has been discharged ever since. Two days ago commenced to suffer from severe pain about the left ear, with general headache and malaise.

Condition on admission.—Healthy, well-nourished woman, looks ill. Redness and œdema over left mastoid, surrounding an old sinus with granulations round the orifice. Radical operation performed on day of admission. Extensive disease; found whole mastoid excavated and filled with pus and *débris.*

December 13*th.*—Severe pain all over head since operation.

December 14*th.*—Intense frontal headache; vomits all food.

December 15*th.*—Very drowsy; answers questions readily when roused; vomiting has ceased; bowels moved by enema; congestion of both optic discs, but no distinct neuritis.

December 16*th.*—Drowsiness increasing to coma, and recurrence of vomiting.

December 17*th.*—Comatose; no paralysis; now distinct optic neuritis. In the evening paralysis of left external rectus. Further operation was decided upon. The cerebrum and cerebellum were exposed and explored. They appeared quite healthy, and nothing abnormal was found. After the operation no further cerebral symptoms appeared, except that the coma became more pronounced. On the 20th signs of congestive pneumonia appeared at both bases. On the 21st the optic neuritis was well marked; there was conjugate deviation of the eyes to the right, Cheyne-Stokes breathing and pupils, complete paralysis and flaccidity of the right arm. Death occurred the same evening.

At the post mortem examination the meninges were found to be quite healthy, and the most careful examination of

brain failed to detect any disease, the brain substance being practically undisturbed by the exploratory operation. The lungs were congested at both bases, but not enough to account for death. No trace of disease was found elsewhere.

(2) F. O., female, *æt.* 10; admitted into the hospital on March 4th, 1901; died April 6th, 1901.

Previous history.—Right otorrhœa eight years, following measles; ceased fourteen days ago. Eight days ago pain came on behind the right ear, associated with persistent vomiting. No rigors.

On admission a well-nourished child, but looking very ill. Some granulations in middle ear; no other signs.

Operation.—The antrum was opened; found full of pus; mastoid cells occupied by cholesteatomatous material. Lateral sinus exposed; found bathed in pus; opened; contained small quantity of stinking clot; followed backwards for one inch and a half until fluid blood was reached. The internal jugular was then exposed in neck, and being found to contain breaking-down clot, was followed down nearly to the clavicle before a healthy part was reached. The upper part was then excised. General condition improved for a time after the operation, but vomiting continued. On March 7th, the wound being very offensive, the lateral sinus was further exposed and more breaking-down offensive clot removed. On the 15th and 16th rigors were noticed, and the course of the injection being probably along the petrosal sinuses, the internal ear was removed and the sinuses exposed for about one inch and found filled with septic clot; they were opened and cleared out as far as possible. The general condition became gradually worse, and death occurred on April 6th.

The day before death a somewhat interesting phenomenon was observed; the eyes exhibited a regular periodic nystagmus of increasing amplitude to the left, followed by a sudden return to the middle line in one movement, the cycle being repeated about fifteen times per minute.

At the post-mortem it was found that the operations had got beyond the septic clot in all the sinuses, but there was

a basal meningitis with effusion of lymph. There was some congestion of the lungs at both bases.

He wished to know if any other member of the Society had followed up the petrosal sinuses, and what was the result. In another case he had recently had under his care, and where symptoms of septic infection persisted after ligature of the internal jugular, the signs of a general meningitis were so marked that he did not think it worth while to follow up the petrosal sinuses.

Dr. GRANT said he presumed the cases last described were similar to the one described by Mr. BALLANCE, of temporal bone septicæmia. There was a tremendously oscillating temperature, and the patient died simply from the poison. He supposed that the paralysis of the external rectus was really due to some toxic effect upon the centre from the movements of the eyeballs. There seemed to have been no basal meningitis to account for it. The members were indebted to Mr. WHITEHEAD for bringing the fatal cases forward, and he hoped the Society would welcome those more than others.

The PRESIDENT expressed agreement with the thanks expressed by Dr. GRANT, and said one undoubtedly learned more from failures than from successes.

EIGHTH ORDINARY MEETING.

Monday, March 3rd, 1902.

The PRESIDENT, Professor URBAN PRITCHARD, IN THE CHAIR.

The following gentlemen were elected Members of the Society:

FREDERICK VASEY ADAMS, EDWARD DEANESLY, WILLIAM KELSON, FREDERICK SPICER.

Specimen of a brain with hernia cerebri. Death three months after operation for left temporo-sphenoidal abscess, due to extension of suppuration through the tegmen antri.

By HUGH JONES.

History.—The patient (male, *æt.* 29 years) had a discharge from the left ear as the result of a box on the ear when he was a boy at school.

This discharge appears to have ceased, or at any rate to have attracted no attention until quite recently.

Condition on admission into hospital (Royal Albert Edward Infirmary, Wigan). *August 9th*, 1901.—Present illness began one week ago. Discharge from left ear, pain in the ear and over the base of the mastoid, headache, speech indistinct, and mumbling. Temperature 103°, pulse 120.

August 10th. Operation.—Antrum and tympanum opened and cleansed and "bridge" of bone removed. The posterior part of the tegmen was found to be destroyed, and granulations were growing from the dura in this situation. The mastoid bone was exceedingly dense, and the antrum—situated more

than usually external to the tympanum—did not exceed a small pea in size.

During the three days following the operation the pulse rate fell to 60 and the temperature to 98° F. The breathing had also become irregular.

August 15*th*.—Very slight right facial paresis; left pupil acts better than right; veins on optic disc distended and the discs themselves slightly swollen. Hands icy cold. Abdomen not retracted. Mental condition distinctly worse. Patient has "rambled" a good deal the last three days and nights. He seems to understand what is said to him, but then says something quite incoherent in reply. Only an occasional word can be recognised.

August 16*th*. *Operation*.—A disc of bone was removed half an inch above and slightly behind the external auditory meatus, and (as he thought that the aphasia was of the motor variety) the opening was extended forwards for three-quarters of an inch with gouge forceps. The dura was incised flap-wise and the brain incised with a narrow knife. A large abscess was reached at a depth of half an inch from the surface. On exploring the abscess cavity with the finger it seemed to reach a little way forwards towards the tip of the temporo-sphenoidal lobe, but also upwards and backwards. The walls felt soft and irregular, and rapidly filled up the cavity so as to grasp the exploring finger. The frayed edges of the cortex were removed, leaving a good-sized opening. The cavity was gently irrigated with boracic acid lotion through a large double drainage-tube. Speaking generally, he was opposed to irrigation of brain abscesses, but in this case the flow of pus was renewed each time the edges of the wound in the cortex were held aside or the finger introduced into the cavity, and he inferred that there were ramifications of the cavity which could only be evacuated properly by irrigation. In cover-slip preparations of the pus the staphylococcus pyogenes aureus was the only organism observed; and a subsequent examination of the pus by the Liverpool Clinical Research Society confirmed his observation.

August 17*th*–19*th*.—Mental condition improved. Pulse

rate and temperature remain subnormal. Patient complained of a "stink" continually, though none was noticed by the nurse or house-surgeon on examination of the dressings.

August 20th–21st.—Symptoms of August 15th (day before operation) more marked. Breathing was occasionally of an alarming character. It got shallower and shallower for a time, as in Cheyne-Stokes breathing, then apparently ceased for a moment, and begun again with a deep heaving inspiration.

August 22nd.—Wound dressed under chloroform. Drainage-tube had worked out and a moderate-sized hernia had formed under the skin-flap. The surface of the hernia looked sloughy, and there was a small quantity of pus under the flap. On exploration with the finger the anterior part of the abscess cavity appeared to be obliterated, but the posterior, internal, and upper limits were extending, the brain substance in these directions feeling soft and spongy. He enlarged the openings in the bone and dura upwards and backwards three-quarters of an inch, and excised the corresponding cortex. A gauze drain was introduced and the skin-flap left open.

After this dressing the hernia and surfaces of the wound were from time to time swabbed with pure carbolic acid.

August 23rd.—A slight improvement in the general condition.

August 25th–28th.—Paresis of right side of face well marked. Right arm weaker than left. Dynamometer: right, 20; left, 40. The patient did not move his right leg as much as the left; he lay on his right side with legs drawn up, and cried out when the legs were forcibly moved. Surface sensibility of right arm and leg was apparently diminished. Speech was very incoherent, so that it was quite impossible to get any intelligible answer from him. He had, however, on one or two occasions startled the ward by calling out, "Don't make such a noise." He appeared to recognise his friends, and wept when his wife visited him. He looked quite intelligent, and appeared to understand signs but not words. A casual observer would not suppose that the patient was suffering from a grave illness. The

patient retained something of his ruddy complexion and intelligent expression to within a week of his death.

August 29th.—Wound dressed under chloroform. The hernia had grown considerably, looked very sloughy, and appeared to be interfering with the drainage. It was therefore ligatured in sections and excised. A few drops of pus exuded from the stump of the hernia. A rubber drainage-tube was inserted in an upward and inward direction and tied in. This was the last active interference with the brain.

September 1st–3rd.—Pulse-rate increased from 60 to 84 and 100; temperature oscillating between 98° and 103°. Had a fainting attack, slight vomiting; incontinence of urine began now (and continued to the end). Dressing soaked with cerebro-spinal fluid. Hernia growing again. Right pupil larger than left. No sensation, right arm and leg. Taste and smell appeared to be lost. Tactile sensation present both sides of the face; that of trunk doubtful.

September 6th–10th.—Temperature 101°–102·6°, pulse 100–120. Some retraction of the head. Conjugate deviation of eyes to right. Hypodermic injections of liq. strychninæ were given daily after September 6th.

September 12th.—Some improvement. Sensation returning to right arm and leg. Head not so much retracted nor turned so much to right side. Temperature and pulse-rate kept high.

September 14th-17th.—Slight rigors. Sensibility of right arm and leg increased. Moved right leg. The wound had been gradually cleaning, and the greater part of the hernia was covered with healthy granulations. Pupils more contracted than usual and unequal pulse weaker, patient noisy at night. Speech quite unintelligible,

September 17th-29th.—Temperature slowly falling. Pulse 110–140. Respirations 20-26. Conjugate deviation of eyes sometimes to right sometimes to left. Patient seldom attempted to speak. Facial paralysis had passed off.

October.—During October and beginning of November the limbs became gradually more rigid. The patient became

emaciated, although he was able to swallow all the food given to him. In the first week of October patient unexpectedly and spontaneously spoke one intelligible sentence; this was his only attempt at speech during October and November. He looked at persons touching him and trying to attract his attention with a look of intelligence in his eyes, and cried out when moved or dressed, but took no notice of signs or spoken words.

Temperature varied from 99°-101°. Pulse 110–140.

On October 3rd, 4th and 10th, antistreptoccic serum was tried without any appreciable effect on the temperature or other symptoms. Forced movements of head and eyes, sometimes to right sometimes to left, were more or less constant.

November 11*th.*—Hernia was quite clear and getting smaller, while epithelium was beginning to spread over it from the edges of the skin. Patient was very emaciated, and the skin was giving great trouble to the nurses. Colour of face was still fairly good and eyes still had the intelligent look. He had the look of a sane man wrestling with an insoluble problem. How interesting it would have been to know what his thoughts were, and how far he was able to reason about and understand what he saw!

The pupils were equal and contracted.

Head retracted somewhat, and turned to left side. Conjugate deviation of eyes in the same direction. Legs flexed and rigid, arms flexed with forearms pronated and fingers flexed over the thumbs. Lumbar puncture yielded no cerebro-spinal fluid.

November 21*st.*—The patient died at 1.30 A.M.

Temperature gradually rose during last three days to 105° Fah., pulse 160, respirations 60 and 70.

The temperature had not been normal or subnormal for longer than a day since September 1st, and the pulse-rate had been higher in proportion to the temperature. Coma did not come on until the last two days.

Necropsy on removal of the brain from the cranial cavity, the meninges and temporo-sphenoidal lobe were found to be

anchored to the tegmen, though there did not appear to have been any direct connection between the abscess cavity and the tympanum. The dura mater was cut some distance from the hernia, and a portion of it removed with the brain. There was no evidence of external lepto-meningitis anywhere except over the tegmen and around the base of the hernia. Hardly any cerebro-spinal fluid was present, and no pus was found inside the brain.

The brain was put into methylated spirit and was not cut for two or three months. The hernia appeared to be growing from the posterior half of the left first and second temporo-sphenoidal convolutions. It was limited above by the Sylvian fissure, except at one point where the grey matter of the insula had become implicated.

As a whole the temporo-sphenoidal lobe was much flattened and atrophied.

On the surface the convolutions of the other lobes presented no extraordinary differences from those of the other hemisphere.

When examined and cut after hardening, the corpus callosum was found to be almost entirely destroyed, and the walls of the ventricles in the greater part of their extent much softened. How much of this was due to post-mortem changes would be difficult to say. With this exception and a post mortem split along the centre of the temporo-sphenoidal lobe, the white and grey matter of the right hemisphere appeared to be normal, and quite firm in texture.

Coronal sections of the hemispheres were made and the two sides compared. A reference to the accompanying plate will obviate any lengthy description of the sections, and it is only necessary to draw attention to one or two facts.

(1) The whole of the posterior half of the first and second temporo-sphenoidal convolutions were destroyed along with the greater part of the white matter of the lobe.

(2) The tail of the abscess which reaches as far as the occipital lobe shows a distinct wall, while there is no definite line of demarcation to the softened white matter outside the original abscess cavity.

DESCRIPTION OF PLATE.

FIG. I.—Photograph taken after death. This is introduced to give an idea of the position and size of the hernia.

FIG. II.—Drawing to show the relative position of the sections. Upper surface of the left hemisphere.

FIGS. III.–VI.—Drawings of coronal sections of left hemisphere viewed from before. The lettering for all the figures is as follows: H.C hernia cerebri; T.S. temporo-sphenoidal lobe; L.V. lateral ventricle; D.C. descending cornu of L.V.; N.C. caudate nucleus; N.L. lenticular nucleus; I.C. internal capsule; Cr. crus; Op.T. optic tract; O.T. optic thalamus; A.F. ascending frontal; A.P. asc. parietal convolution; I. Island of Reil; S.T. 1st temporal conv.; D.M. dura mater; S.W.M. softened white matter; T.A. tail of abscess.

FIG. III. shows the origin of the anterior portion of the hernia from the white matter of the T.S. lobe, and in a small degree from the grey matter of the insula. The remains of the first T.S. convolution is flattened against the operculum. The dark irregular streak in the T.S. lobe indicates a p.m. split (a similar split existed in the right T.S. lobe), but the white matter was also entirely disorganised. In this section the corona radiata and the corpus striatum appear to be unaffected, so also the ascending frontal and parietal convolutions.

FIG. IV. shows considerable softening of the internal capsule and the fibres converging to it, also complete destruction of the supr. and middle T.S. convolutions. The softening extends to the walls of the descending cornu of the lateral ventricle.

FIG. V.—Posterior margin of the hernia. Extensive softening reaching the walls of the lateral ventricle and its descending cornu. Fibrous bands seen running into the hernia.

FIG. VI. shows what to me (after careful comparison with the opposite hemisphere) seemed to be the tail-end of the original abscess cavity, with well-defined walls flattened together. The next section, ¼-in. behind this one and not figured, did not pass through the abscess wall.

Hernia Cerebri following operation for Temporo-sphenoidal Abscess.
Mr. HUGH E. JONES' Case

(3) The softening process attacked the posterior limb of the internal capsule, reached both the descending horn and the body of the lateral ventricle, and probably destroyed or disorganised most of the fibres from the base of the central convolutions, the supra-marginal convolution and the angular gyrus.

(4) The hernia grows mainly from the softened white matter beyond the destroyed inner wall of the abscess; but the pseudo-cortex of the hernia has the appearance of being a direct continuation of the grey matter of the convolutions, and presents a superficial resemblance of the grey matter.

Remarks on symptoms and localisation.—Before operation, and for some days afterwards, he thought the aphasia was due to pressure on Broca's convolution. At this stage no weakness of the arm and leg was detected, and the patient's perception of intense fœtor, when nothing unpleasant was noticed by the nurses or house-surgeon in the dressings, appeared to confirm our opinion that the abscess chiefly affected the anterior part of the temporo-sphenoidal lobe.

But later disturbances of sensation, paralysis of the right arm and leg, and the pronounced sensory aphasia pointed to lesions of the internal capsule and the posterior end of the first temporal convolution, and probably the angular gyrus (conjugate deviation of eyes). It is probable that in the later stages there was complete physical blindness, due to destruction of the occipital radiation. We found it impossible to tell whether there was hemianopsia. Owing to the extent of the lesion it is difficult to allocate the symptoms to their actual causes. For example: the first temporal convolution was destroyed, but so also were the commissural and internuncial fibres connecting the four speech centres. (Unfortunately, for one reason or another, the patient was not asked to read or write, so that it is not known whether there were alexia and agraphia as well as aphemia in the early stages of the illness.) Then again it would be rash to refer the difficulty of breathing (pseudo-Cheyne-Stokes) and the elevation of temperature and pulse-rate to the irritation or destruction of any particular areas.

The symptoms of September 1st, etc., seem to have been due to implication of the lateral ventricle and leakage of cerebro-spinal fluid, resulting from the excision of the hernia.

Remarks on the operations and after treatment.—He thought the case would have done better if the wound had been left open after the trephine operation, or reopened at an earlier date. When reopened six days after the operation a hernia had formed and there was a collection of pus and sloughy material under the flap.

(Of course, the flap had been stitched up on the assumption that the irrigation of the cavity had rendered it fairly clean, and that the large opening in the cortex would provide for drainage.)

He did not believe that the secondary operation did any good, and was afraid that the excision of the hernia (August 29th) did harm. His reason for excising the hernia and re-exploring the brain was the continuation of the low temperature and slow pulse-rate.

Excision of a large portion of cortex, or of a hernia, necessarily involves the removal of a good deal of support from the walls of the ventricles, and where, as in this case, the intervening brain substance was in a softened condition, it seemed to him to add very much to the risk of stretching, if not actually rupturing the ventricular walls. One had, therefore, to consider which was the greater danger, to allow the hernia, or a small opening in the cortex, to provide the outlet for the products of the septic processes or to make room for the deeper parts of the brain to approach the surface at the risk of rupturing the ventricular walls.

He believed the failure at the first brain operation to eradicate the disease was due to the fact that he was dealing with a double abscess, an old encysted one, a part of whose upper and inner wall was destroyed, and a secondary recent abscess or infiltrated area in connection with and internal to it.

The septic process was ultimately overcome, and the whole area involved was probably undergoing repair, but too late to save life.

In conclusion, the surgical lessons which this case, and a

successful case published by him in the last volume of the *Transactions*, seemed to him to teach, were: 1. Let the first operation be thorough. 2. If there is any doubt about the thorough cleaning of the abscess, leave the flaps open and treat the wound by the open method. 3. If a hernia forms, remember that it probably grows from a large area of septic, softened and infiltrated brain substance, deep within the hemisphere, and must therefore be treated with the utmost gentleness so as not to lacerate or bruise the brain, and that neither it nor the cortex around it should be excised. The hernia itself should be regarded as a natural drain. 4. If cerebro-spinal fluid continues to be lost after the hernia has begun to shrink and its surface has become clean and covered with healthy granulations, he thought an attempt should be made to cover the hernia with skin, by means of the original flap or by grafting.

Mr. Arthur Cheatle asked how Mr. Jones drained the abscess, and whether he washed it out. If so, what sort of drainage did he use? He regarded the drainage of cerebral abscess as a subject of great difficulty, and the riddle was not yet by any means solved.

Dr. Dundas Grant asked whether there was any definite line of treatment indicated in cases of hernia cerebri. One surgeon at the Edinburgh meeting of the British Medical Association stated that the best plan was to remove more bone. He would like to hear whether it was the feeling of the Society that hernia cerebri was the result of removing too much or too little bone. He was lately reproached for recommending the removal of more bone in a case of the kind, in which after removal—though he did not think on account of it—a hernia cerebri developed.

Mr. Fagge suggested that hernia cerebri was not due to the removal of either too much or too little bone. He thought it was accepted as being caused by a local and spreading infection, either due to another abscess, or to a diffuse infection of cerebral tissues. In a case of failure he thought it would have been a better line of treatment, by

which he might have saved his patient, to have removed all the area of the brain superficial to the abscess, leaving the bottom of the wound simply the bottom of the abscess cavity, thus making a funnel-shaped excision of the brain tissue.

Mr. DE SANTI said he had had experience of such cases in general surgery, and thought the condition was due to œdema, arising from infection. The suggestion which had been made was a fair one, but its efficacy would depend upon the depth of the abscess. In two or three cases of hernia cerebri the treatment adopted was by cutting off the brain tissue and applying strong formaline. In one case that kept the condition down, and the brain tissue recovered, as the formaline caused contraction and hardening. He thought it important, where that could be done, to preserve as much of the dura mater over the site of the operation, and to disturb it as little as possible. Where it could be done, the dura should be sutured.

Mr. FAGGE said if, in the opinion of the last speaker, the condition was due to cerebritis, what possible effect could the size of the hole in the dura have on it? If hernia cerebri is really due to a spreading inflammation, the larger the incision in the dura, the less likely is hernia to occur, because drainage could be better ensured.

Mr. JONES, in reply, said his first opening was one and a quarter inches long by three-quarter inches high, situated just over the meatus. The brain corresponding with that portion was removed at the first operation. Having secured some small bleeding vessels, he removed all that lay between his finger in the cavity and the surface. The cavity seemed to him to extend a long way towards the apex of the tempero-sphenoidal lobe, also upwards and backwards. At the second operation he removed more bone, but the hernia increased. At the same time, he enlarged the opening in the dura. At the third operation he removed still more bone, and also more cortex. But in spite of everything the hernia returned, and became larger with each operation. He believed the third operation was disastrous, and that it

really led to an extension of the softening, and that the lateral ventricle was opened up about three days after that operation. He thought there was considerable leakage from the lateral ventricle. He washed the abscess out at the first operation, because, although he thought at first all the pus had been evacuated, he still found on lifting the edges of the cortex that more pus came out. Therefore he decided to wash it out by means of a double large drainage tube. A rubber tube was also left in, but it came out at the first dressing. The second time he put in a gauze drain, but that also was pushed out, and he made no further attempt to keep a drainage tube in. His impression was that he had done too much.

Microscopic section of a growth removed from the external auditory meatus.

By Hugh Jones.

Maggie R., *æt.* 22 years, was admitted to the Liverpool Eye and Ear Infirmary, October 23rd, 1901. She attended this hospital four years ago with discharge from the right ear, which lasted two or three weeks and then stopped.

Eighteen months ago she went to another hospital with swelling in the right meatus. The swelling was incised, and according to the patient's statement, "blood and matter" came out of it. For the last eight months she has had no treatment, and the swelling has gradually increased. There has been occasional pain.

On examination, the right meatus was found to be completely occluded by a soft swelling of its anterior wall—covered by healthy looking skin. The swelling projected slightly into the hollow of the concha, and also caused a slight bulging in front of the tragus.

At first sight it had the appearance of a sebaceous cyst, but was so soft and compressible that a long, narrow speculum could be passed into the meatus as far as the inner third, and a small portion of the membrana tympani could be seen.

The swelling extended into the bony meatus to within a few millimetres of the membrana tympani.

No enlarged glands were found. The history seemed to indicate that the swelling was the result of an abscess or suppurating cyst. but its extension along the meatus and its consistence did not support this idea; on the other hand, there was nothing to suggest malignancy.

He excised a wedge-shaped piece of the growth, extending inwards towards the drum as far as he thought the growth reached.

No cavity was opened, and no cyst fluid or pus escaped.

The wound healed rapidly. Since the operation the swelling had been slowly but steadily returning, and was now—three months after—nearly as large as before the operation.

The patient complained of no pain, there was no discharge, and the watch could be heard at six inches.

The section appeared to consist of healthy skin abundantly supplied with glands, but with all the subcutaneous areolear tissue and fat replaced by spindle cells. Whether these would ultimately develop into fibrous tissue or go on proliferating, was a question he would like solved. At that time he only found fibrillar tissue around the glands—everywhere else the cells seemed to cross one another in all directions. He would like the advice of members as to what further measures should be taken. He added that he had not tried injection, nor electrolysis, nor complete excision.

Some foreign bodies removed from the middle ear.

By Hugh Jones.

(1) *Fragments of coal removed from the middle ear of a collier.*

This was the case of a man who claimed compensation for injury to the left ear—alleging that a piece of coal flew from the point of his pickaxe into the ear.

The surgeon to the colliery not finding any coal in the meatus, asked Mr. Hugh E. Jones to see the case.

On examination a perforation was seen in the anterior part of the membrane low down, and behind this something black could be seen through the semi-translucent membrane. No coal was found in the meatus itself, though some small particles may have been lying against the lower edge of the tympanic ring. A probe bent at the tip was then passed through the perforation, and a loose foreign body could be easily felt behind the membrane.

By a little manipulation of the probe the largest fragment was brought into the perforation, and out into the meatus. Several smaller pieces were afterwards removed by syringing. The perforation had the appearance of an old one, and there was a dry perforation of the right membrane. A week or so later small pieces of coal were removed from the right meatus, though none were found at the first examination, and the patient had not worked in the interval. This fact, and the patient's manner, especially his exaggeration of his deafness, led both surgeons to think that the coal had been deliberately put into the ears by the patient, though it was probable that it had got into the left tympanum from the meatus by the action of gravity.

(2) *Shank and head of a large collar-stud impacted in the tympanum (?) and external meatus. Removed by post-auricular incision.*

J. W. G., a youth, *æt.* 18, while reading was playing absent-mindedly with a collar-stud, the base of which was missing. The stud slipped into the left meatus, and all the patient's attempts to extract it only served to drive it further in, until the head was impacted in the middle portion of the meatus. A surgeon then attempted to remove it—chiefly by syringing—but without success.

Mr. Hugh E. Jones saw him one week after the accident. The meatus being swollen, no attempt at removal was made. At the end of another week the swelling had subsided, but the stud-head fitted the meatus so closely that not even a thin wire could be got past it. Rather than risk further

Fig. IX.

Malformation of the Auricle.

Mr. Cresswell Baber's Case.

Malformation of the auricle with asymmetry of the Eustachian tubes. (Case and photograph.)

By E. Cresswell Baber.

W. P., gardener, *æt.* 29, came to the Brighton Throat and Ear Hospital on July 4th, 1901, on account of deafness and noises in the left ear. The right ear has always been deformed. He has never had an operation to the nose or throat. There is no history of malformation of the ear in any other member of the family.

The right auricle is rudimentary, consisting chiefly of an elongated roll, the lower part of which is soft to the touch; the upper part, however, contains cartilage. There is a small nodule of cartilage also behind the larger mass. There is no distinct meatus, but there are several small depressions. One is situated just in front of the auricle, at the lower end of the cartilage, and admits a probe to the depth of a quarter of an inch. On the rims of the auricle are two smaller depressions, the upper one quite shallow, the lower three-sixteenths of an inch deep. The latter sometimes discharges. At the anterior margin of the auricle, close to its upper end, there is another minute depression.

Left ear.—Auricle normal. M. T. pale, opaque, retracted.

Right ear.—H. D. watch (normally about seven feet), contact, and on mastoid and temple. Tuning-forks C to C^{iv}, Rinné —. B. C. perfect.

Left ear.—H. D. watch half an inch. Tuning-forks A^{i} and C^{ii}. Rinné —. B. C. good.

Weber tuning-forks C to C^{iv} to left.

Pharynx.—On phonation the left side of the palate is seen to act more vigorously than the right, and the uvula is slightly drawn to the left. There is no malformation of the palate or fauces.

Nose.—Deflection of the septum to the left.

Naso-pharynx.—Examination with the rhinoscopic mirror shows the right Eustachian cushion distinctly smaller and

flatter than the left, the depression in the situation of the Eustachian orifice being smaller and less marked.

There is no distinct asymmetry of the face.

The condition of the right Eustachian tube was considered to be developmental.

Mr. BABER mentioned that Voltolini and Politzer had described cases in which abnormalities of the Eustachian orifices occurred, probably developmental in character. Politzer had pointed out that in unilateral atresia (of the meatus) the corresponding half of the palate is often worse developed and less movable, from which he thought a conclusion as to deficient development of the middle ear was possible. Greater accuracy in forming an opinion could probably be attained by examining the pharyngeal orifice of the Eustachian tube.

Dr. MILLIGAN asked whether the Eustachian tube was pervious. Had Mr. BABER applied the bougie to see?

Mr. BABER said he had not applied a bougie. One could not auscultate, because there was no meatus to auscultate through.

A girl, aged 15 *years, in whom a large exostosis of the left auditory meatus had been removed, revealing extensive destruction of the tympanic structures and mastoid cells.*

By HERBERT TILLEY.

A girl, *æt.* 15, was brought by her mother, who had noticed a "blocking of the left ear passage." There was often a slight amount of moisture escaping from the passage, but at no time had she any ear or head-ache. Discharge was first noticed in this ear last August, three weeks after the removal of adenoids, but it gave rise to no symptoms of any importance, and has occurred at intervals since that time. The meatus was so occluded that a fine probe could not be passed beyond the obstruction.

In order to the more efficiently remove the hyperostosis it

was decided to expose it from behind, and if necessary to thoroughly examine the tympanic and antral cavities. The usual curved post-aural incision was made, and the hyperostosis and bony meatus brought well into view. It was then found that the meatus from the growth inwards to the tympanum was filled with a putty-like mass, composed of inspissated pus, cerumen, epithelial scales, &c. This was removed by means of a syringe and small scoops, when the tympanic membrane and ossicles were found to be completely disorganised. Further investigation showed that the antrum was full of the same material, and hence the complete post-aural operation was carried out. The patient made an uneventful recovery, without any atresia of the meatal wall.

The case illustrated the serious pathological conditions which may exist behind an obstruction, and yet give rise to no urgent or distressing symptoms.

Dr. Milligan expressed agreement with the line of treatment adopted in the case. He thought such cases of hyperostosis or exostosis, accompanied by suppurative lesions, were attended with risk to the patient. One did not know at what moment severe trouble might not ensue; and the present case was a good illustration of the fact that behind a comparatively harmless-looking structure there might be the cause of death. He had seen a case a short time ago where he was not certain if there was pus behind the large hyperostosis. There was a very small chink, and by introducing peroxide of hydrogen he was able to establish the fact that there was a purulent secretion behind. He thought that was a sufficient indication to attack it and remove it by post-aural operation. He had seen two cases in which severe intracranial symptoms ensued on a condition such as the present, in which operation had been proposed by different people but was declined, as there did not seem to be sufficient indication to warrant it. Urgent symptoms came on suddenly, and a fatal result ensued. The present patient was quite out of danger now, although there was a fair amount of healing yet to be done.

Mr. Baber asked what was the early history of the case,

and whether it was operated upon through the meatus; also, did suppuration exist before the operation on the hyperostosis?

Dr. GRANT asked whether there was any distinct perforation sound on inflation in Dr. Tilley's and Dr. Milligan's case? He felt strongly the danger attaching to hyperostosis in the meatus, especially under certain circumstances; and if the tympanic membrane was not accessible, for paracentesis, for instance, great care ought to be exercised in operating upon the nose or naso-pharynx. Some years ago, a member of the profession had a comparatively slight nasal cauterisation. Perhaps instruments were not quite so good then as now, but there followed a middle ear suppuration. It was impossible to perform paracentesis on account of the presence of the hyperostosis, which, if there had been no ear complication, might have been of no danger at all. Unfortunately he died of meningitis. It was very important that the condition of the ear and the meatus should be thoroughly made out before any comparatively slight, and certainly before any severe, operation was carried out, either in the nose or in the naso-pharynx.

Dr. FULLERTON asked what the patient complained of; was any discharge present before the patient came for the trouble?

Dr. HERBERT TILLEY, in reply, said several of the questions would be found to be answered by the notes. There were no urgent or distressing symptoms, and the patient did not come on account of anything connected with the ear, but her mother pointed to the ear as a curiosity, and he then found it was quite obstructed. Owing to the size and external situation of the exostosis one could not auscultate the ear very well. If he had applied some peroxide of hydrogen there *might* have been some bubbling, but he thought it would have taken an hour or two for the liquid to pass the complete obstruction. When asked leading questions she said the ear sometimes felt a "little curious" on that side. It was because of the slight moisture that he had performed the post-aural operation. He then found that the auditory

meatus was filled to the position of the tympanum with an inspissated secretion. On removing this he could find no drum whatever, and the ossicles were in a very attenuated condition of caries. He next passed a probe towards the antrum, and thought it wise to examine that cavity to ascertain that no inflammatory products were retained there; it was found to be filled with the same secretion that occupied the meatus. An attack of influenza, a severe cold, or a blow on the ear, in such a case might suffice to place the patient in a very precarious condition.

A case of tuberculosis of the temporal bone in an adult after operation. Shown at the Extraordinary Meeting, June 10th, 1901; *vide Transactions*, vol. ii., p. 123.

By Arthur H. Cheatle.

The extensive wound was quite healed, but the patient had lately been operated on by Mr. Watson Cheyne, in King's College Hospital, for a tuberculous elbow and a tuberculous abscess in the back.

Dr. Grant said that, in addition to the facial paralysis, there was almost complete paralysis of the hypoglossal of the same side. That appeared in another case also which had been shown. He asked how far the disease extended in the direction of the foramen for the hypoglossal (the anterior condylar foramen).

Dr. Milligan congratulated Mr. Cheatle on the result, and asked whether he had discovered the presence of tubercle bacilli in the discharge from the ear, or from the granulation tissue, or from the necrotic bone in the neighbourhood. He thought such examination was necessary when there was not evidence of tubercle elsewhere in the body. Seeing the extent of the disease which was present, he thought the result excellent. He had had experience of lesions of a tubercular nature in the temporal bone, and the more he saw of them the more disappointed he was with them. Some

cases got well, but others hung fire very much. He asked whether Mr. Cheatle performed any set operation on this patient's temporal bone, or did he simply remove the disease with a spoon as it presented itself? Was there more than one operation?

Mr. CHEATLE, in reply, said he did not make any further examination for tubercle bacilli, because the case had passed into Mr. Watson Cheyne's hands. In reply to Dr. Grant, he got down to the base of the skull and removed the whole mastoid process and the floor of the middle ear; he found that the skull over the middle and posterior fossæ carious for some distance, and this was removed with bone forceps. He removed all he could consistent with life. The dura mater was granulating, he thoroughly curetted that, and applied pure carbolic acid. Only one operation had been performed by him.

A case of Jacksonian epilepsy following operation for temporo-sphenoidal abscess of Otitic origin.

By P. DE SANTI.

Jane D., *æt.* 22, first came under notice at Westminster Hospital, September 24th, 1901. Her history was as follows: When three years of age she had discharge from the right ear, which has persisted; she had never had any pain and did not complain of deafness.

About the middle of January she had severe pain in the right ear, and fever which continued for a fortnight; just previously the discharge had stopped, but it recommenced at the end of the fortnight, and there was some temporary relief to the pain. The pain and fever, however, returned, and she was admitted into the Edinburgh Royal Infirmary, in March, 1901, under Mr. MACGILLIVRAY.

On admission she had a pained, anxious expression, answered slowly but correctly; her temperature was 103·5°, and her pulse 126; there was slight discharge from the

right ear and œdema, redness, and tenderness over the right mastoid. The mastoid antrum was opened but no pus found. This was on March 6th. The symptoms continued, the bowels were constipated and the patient was drowsy. March 15th she was trephined over the right temporo-sphenoidal area, the dura was tense, and the brain did not pulsate. The brain was explored, but with negative results; the tegmen tympani, so far as could be seen, was slightly reddened. A small tube was inserted in the brain, but as no discharge followed it was removed next day, and the wound soon healed.

Temperature on the 15th fell from 103° F. to normal, and remained thus until the evening of the 17th, when it rose to 105·3°. It kept on varying until March 28th, when it fell to subnormal, and remained normal or subnormal until April 2nd, when the patient became very restless, moaning and crying out, with great pain over the eyes (no optic neuritis); she also suddenly became paralysed in the left hand and arm, and left side of the face; her speech was indistinct, and the tongue was protruded to the right; she continued crying and moaning, tried to get out of bed, and passed urine and fæces involuntarily.

On April 3rd the trephine wound was reopened, and bone clipped away over the motor area of the arm and face, and the brain explored. An abscess was found and one ounce of pus was evacuated.

The temperature afterwards fell to 99° F., and remained practically normal during the rest of the patient's illness. Drainage was kept up for one week, when all discharge ceased. The patient, however, remained paralysed as regards the left upper limb and left side of face, moaned and screamed, refused treatment, and had to be fed with a tube for ten days. She was then threatened with removal to the ward for restless patients, and at once stopped crying, took her food and slept well.

The paralysis gradually improved, until seventeen weeks after its onset it had all disappeared.

On June 18th she had a sudden fit, with twitching down

the left side and face; it lasted a minute and a half, and she had a similar attack a week later.

The original wound, which was tender, was opened up, and a little pus was evacuated and drained.

The patient made a good recovery, and went to a convalescent home on July 2nd.

Later in July the fits became more frequent, as many as sixteen in a day, and were apparently more severe. The preliminary aura started in the left side of the tongue, and then involved the left hand and arm.

She came to the aural department, as before stated, in September, 1901, for the fits and discharge from the right ear.

On examination he found the girl to be intelligent, quiet, and able to give a very lucid account of her illness. The fits had diminished in frequency and also in intensity, but in the fortnight previous to her visit she had had two that were very severe.

On examination of the skull, the usual scar of a mastoid operation was found, and in addition two depressions over the right temporo-parietal region due to the two operations of trephining. The external auditory meatus was much narrowed and full of pus, which, when cleared away, revealed a fairly large polypus.

The polypus was removed and its base touched with chromic acid, a solution of peroxide of hydrogen was ordered for syringing the ear, and 20 grains of bromide of potassium were given internally three times a day.

By October 29th all discharge had ceased, and the fits had become fewer and less intense in nature.

The patient was admitted for observation. She was in hospital four weeks, and during that time had only two slight fits, the preliminary aura being each time the left side of the tongue.

During the next five weeks the patient had two severe fits. Since then she had had on an average about two fits, occasionally severe, in a fortnight.

He considered the case to be one of "Jacksonian epilepsy," and that there was some irritation, probably from adhesions

due to the trephining of the skull, and situated over the lower and partly the middle third of the cortex of the anterior and posterior central convolutions, in other words, over the area of Rolando, corresponding to the functions of the face and arms.

The case was brought forward entirely for discussion as to treatment.

There was no doubt as to the diagnosis and the localisation of the lesion in this case, but doubt arose in his mind as to operative interference. As far as his experience and knowledge went, many cases of Jacksonian epilepsy had been operated upon, but usually with only temporary benefit.

In the present case one had to bear in mind that the fits were getting less in number and severity, and taking this into consideration, was it advisable to subject the patient to an operation, which, though devoid of any special danger, also held out but little chance of permanent improvement?

His own opinion was against operative interference, at all events for the present.

Dr. Dundas Grant asked whether any member could give an opinion as to the amount of mooring or soldering of the surface of the dura mater and cranium together after exploratory operations. He had seen cases in which it was thought that certain disturbances of equilibrium after successful operations for cerebral abscess were due to that mooring of the brain, because, at a certain spot, it had not the advantage of being on its natural water-cushion. He was sorry Mr. Ballance was not present, as he understood he had been doing something in the way of introducing a layer of gold-leaf between the dura mater and the brain to prevent such mooring. The case mentioned by Mr. de Santi suggested that such mooring might be present, and it might be possible to minimise that by the application of gold-leaf.

Mr. de Santi replied that he had had no experience with gold-leaf, but it seemed to be a measure which might be tried, and if he had a similar case he would try it; but in the present case the damage extended beyond the superficial parts. Paralysis of the left arm and face followed shortly

after the operation on the temporo-sphenoidal lesion, and the abscess involved that part of the brain which had become damaged by it. The fact that the trouble was deeper would, he thought, be accounted for by the adhesions between the dura and the brain.

A case of complete bi-lateral deafness, with left facial paralysis, due to syphilitic intracranial mischief of the nature of basal meningitis.

By P. de Santi.

Arthur L., *æt.* 32, married, attended the Out-patient Department at the Westminster Hospital, February 4th, 1902. His mother accompanied him and gave the following history:

In January, 1896, the patient fell from a van on to his head, but did not lose consciousness, and within a few days was quite well again. Eleven months later (December, 1896) he began to have severe pains in the occipital region, the back of the neck, and the ears. These pains increased when he came to the hospital in January, 1897. The pains were very severe, and there was retraction of the neck, some muttering delirium, a temperature of 101° F., and photophobia. The pupils were equal and the optic discs normal.

Traumatic pachymeningitis was diagnosed, and the patient remained in the hospital some eight weeks, during which time the right ear gradually became deaf. In March, 1897, he went to a convalescent home. Whilst there he had a fit—the only one he ever had—in which he felt suddenly giddy, vomited, but was not unconscious. This feeling of giddiness lasted about a week, and was followed by complete left facial paralysis and deafness in the left ear. The paralysis remained complete, and the deafness soon became equal on both sides and apparently complete. He also suffered from giddiness in the dark. He had never been able to work since December, 1896. On examination he found the patient unable to hear the loudest sounds and suffering from left

facial paralysis. He was unable to get about at all in the dark owing to giddiness. No ophthalmic lesion.

Further examination revealed a sinus over the left frontal eminence leading down to carious bone. This was evidently a gumma, and on further careful inquiry he found the patient had contracted a sore on the penis about two months before the onset of the head symptoms, and that his wife subsequently had one dead child, one miscarriage, and in the interval between these, two living children, one suffering from "abscesses," the other from "breaking out on the face." Dr. PURVES STUART, his colleague at Westminster Hospital, kindly examined the patient, and reported that on February 2nd, 1902, when he saw him, "in addition to being stone deaf in both ears, the patient had the frontal sore already referred to and total paralysis, upper and lower, of the left face. The pupils were slightly unequal, the left being the larger, but they reacted normally to light and accommodation. The optic discs were normal. All the cranial nerves were otherwise normal. Taste, as tested by the galvanic current and by sugar and salt, was normal and equal on both sides front and back. The paralysed facial muscles had lost their faradic excitability and to galvanism reacted but sluggishly, K C C being > A C C. His limbs and trunk showed no abnormality, motor or sensory. The lesion of the facial is apparently above the geniculate ganglion, since taste is unaffected and the auditory nerve is totally paralysed; and it is probably not in the substance of the pons, since there are no signs of affection of the sixth nerve or of weakness of the limbs. The case appears to be one of basal syphilitic meningitis, causing complete degeneration of both auditory nerves and of the left facial nerve."

There was, in his opinion, no doubt that the pathological changes in this case were of syphilitic origin and not due to the injury to the head, for the supposed traumatism occurred eleven months before the onset of the headaches, and was not followed by symptoms. Moreover, there was no doubt that he acquired syphilis a little while before the head symptoms occurred.

As regards prognosis, he did not consider anything could be done to improve the hearing or facial paralysis; but the man was on twenty-grain doses of iodide of potassium for his syphilitic condition, and this treatment must be persevered in as he had active syphilis present, and also in order to prevent possibly further intracranial mischief.

Dr. Dundas Grant said that the way in which the man put out his tongue suggested that there was paralysis or paresis of the right hypoglossal nerve; there was certainly a concavity on the right side of the tongue. It would be very difficult to account for, as it would mean the disease which affected the left facial nerve jumping over the left hypoglossal and then affecting the right. Possibly the concavity had been produced by the pressure of the non-paralysed angle of the mouth upon the tongue. At the same time there was abnormal convexity on the non-paralysed side. There was no paralysis of vocal cords, so apparently the fibres which went to form the recurrent laryngeal nerve had not been affected.

Mr. Richard Lake said he had the same case under his care five years ago, but did not know it was going to be discussed. He could procure the whole history, written out by the man himself.

Dr. Milligan thought there was little doubt from the description that the case was one of basal meningitis. An interesting point in the case was that of prognosis. Could anything be done in such a case? He understood it had been going on for many years, therefore the forecast did not seem good. He asked whether, in addition to the iodide of potassium, Mr. de Santi had tried injections of pilocarpine.

Dr. Tilley said, in reference to Dr. Milligan's suggestion, he had tried pilocarpine injections in a similar case of basal meningitis. Before doing so the patient was so deaf that everything had to be written on a slate, but after the injections for three days the patient could hear spoken words at the end of the bed. She maintained that improvement for two months, the injections being given once a week; but

four or five months afterwards she reverted to her old condition, and further injections were useless. It was a labyrinthine deafness.

Mr. DE SANTI, in reply, said the reflexes were not affected. He had not tried the effect of pilocarpine, as he had only seen the man twice. He thought it would not do any harm, even though it might not do any good.

A case of a membrane stretching across the deep meatus.
(*Previously shown.*)

By ARTHUR H. CHEATLE.

The membrane had been dissected out, but had re-formed. He proposed doing the complete post-aural operation, with subsequent skin-grafting, as the hearing was very good before the re-formation.

Dr. MILLIGAN suggested, before performing a post-aural operation, the membrane might be removed again, and the interior of the external meatus lined with a very thin gold tube, to see if that would prevent the re-formation of the membrane.

Mr. CHEATLE said he did not feel inclined to try it, and that the post-aural operation would be much easier and more reliable. Using tubes to keep the meatus open was a hopeless business.

EXTRAORDINARY MEETING.

Monday, April 14th, 1902.

The PRESIDENT, Professor URBAN PRITCHARD, IN THE CHAIR.

The PRESIDENT announced that the next ordinary meeting would be held in Dublin on May 31st.

Mr. ARTHUR CHEATLE presented

The report of an examination of the ears of a thousand school children between the ages of three and sixteen years in the Hanwell District School, including the Ophthalmic School.

"The Hanwell District School receives the children of the poorest class from Southwark and the City of London; the Ophthalmic receives those children who are suffering with eye troubles, especially ophthalmia, from all the Metropolitan Poor Law Schools.

For permission to make the examination, I am indebted to the Governors; I must also express my best thanks for great help to Dr. LITTELJOHN, who is in medical charge of the combined schools, and also to Mr. SYDNEY STEPHENSON, who has care of the ophthalmic department.

The object for which the examination was undertaken was to ascertain what proportion of children suffer from diseases of the ear, in order that attention might, if necessary, be drawn to the subject; and that, as so many of the dangers to life and hearing have their origin in childhood, means might be taken to guard against them during that period of life.

FEMALE.

5	6	7	8	9	10	11	12	13	14	15	16		Total
29	29	34	31	50	57	51	47	54	39	5	2	...	454

14	15	16	17
65	8	7	1

FEMALE.

		5	6	7	8	9	10	11	12	13	14	15	16		Total.		TOTAL
	1. NORM	8	11	15	17	19	24	16	7	14	13	2	1	...	151	...	341
	2. „	2	—	1	—	—	1	—	3	3	2	—	—	...	13	...	29
	3. „	2	3	—	—	—	—	2	1	—	—	—	—	...	8	...	11
	4. „	—	1	—	1	1	3	9	2	1	2	—	—	...	20	...	49
	5. „	—	—	—	—	—	—	—	—	—	—	—	—	...	0	...	1
	6. Abnor	—	—	—	—	—	—	—	—	—	—	—	—	...	0	...	3
18	7. Forei	—	—	2	—	2	1	—	—	—	—	—	—	...	5	...	9
		1	—	—	—	1	2	—	2	—	—	—	—	...		...	
	8. Forei	—	—	—	—	—	—	—	—	—	—	—	—	...	0	...	1
	9. Cerun	2	2	3	—	2	2	2	1	2	1	—	—	...	18	...	33
	10. Furun	—	1	—	—	—	—	—	—	—	1	—	—	...	2	...	2
	11. Eczem	—	—	—	—	—	1	—	—	—	—	—	—	...	1	...	2
	12. Hæm	—	—	—	—	—	—	—	—	—	—	—	—	...	0	...	1
	13. ? Con	—	—	—	—	—	—	—	—	1	—	—	—	...	1	...	8
	14. Acute	—	—	—	—	—	—	—	—	1	—	—	—	...	1	...	2
	15. *Depre*	3	4	1	—	3	1	1	6	5	3	—	—	...	35	...	64
166	16. „	3	1	3	2	4	1	3	4	3	1	—	—	...	30	...	77
	17. „	—	1	—	—	5	—	1	1	—	1	—	—	...	9	...	25
	18. Middl	—	—	—	1	—	1	—	—	2	1	1	—	...	6	...	6
	19. *Chro*	1	—	—	—	1	—	—	3	1	1	—	1	...	10	...	20
88	20. „	2	—	2	4	3	2	7	4	3	—	—	—	...	28	...	51
	21. „	—	—	—	—	—	—	—	—	—	—	1	—	...	1	...	1
	22. „	1	—	—	—	1	1	—	2	—	—	—	—	...	5	...	16
	23. *Post-*	1	1	1	2	3	5	2	7	4	5	—	—	...	32	...	55
	24. „	3	3	4	3	4	8	5	5	9	4	—	—	...	50	...	116
247	25. „	—	—	—	—	—	1	—	—	—	1	—	—	...	2	...	7
	26. „	—	—	—	—	—	1	—	—	—	—	—	—	...	1	...	1
	27. „	1	1	2	1	3	3	3	1	5	3	1	—	...	25	...	68
	28. Inter	—	—	—	—	—	—	—	—	—	—	—	—	...	0	...	1
		29	29	34	31	50	57	51	47	54	39	5	2	...	454	...	1,000

To face page 74.

In conducting the examination, each child was placed eighteen feet away, and simple questions in a quiet whisper were asked: (1) with both ears unclosed and the eyes shut; and (2) with one unclosed ear first turned to me, and then the other. After the result was noted, the ears, nose, pharynx, and in a large number, the nasopharynx were examined.

If necessary, tuning-fork tests were applied, but in all the middle ear cases, Politzerisation was employed in order that the diagnosis might be strengthened by the improvement obtained.

A distance of eighteen feet was used, as it was found to be a convenient one in the first room in which the examination took place, and was therefore employed all through.

The test erred on the side of leniency, but formed a good working standard. The whispered voice test is often deceptive to the examiner, but in nervous, stupid, or very young children it is the only one possible; a positive result can usually be obtained, and is less deceptive than a child's answer to the watch. Examination of the nasopharynx for adenoids was made in *all* children in whom the ears were affected, and those in whom from any appearance or symptom they might be suspected.

I am perfectly well aware of the defects in the examination, and also that the number examined is insufficient for statistical work.

The following table is introduced to compare the Main School which receives children from the City of London and Southwark only, with the Ophthalmic, which receives them from *all* the Metropolitan Poor Law Schools. On the whole the tables correspond, the most marked differences being seen in the *depressed membranes* and *post-suppurative* tables. Those described as *normal* are nearly identical:—

	Ophthalmic School.			Main School.			Total Ophthalmic and Main.	
	Male.	Female.	Total.	Male.	Female.	Total.		
1. Normal ears and hearing	64	54	118	126	97	223	341	
2. „ ears with enlarged tonsils and adenoids	6	5	11	10	8	18	29	
3. „ ears with adenoids	1	5	6	2	3	5	11	
4. „ ears with enlarged tonsils	13	7	20	16	13	29	49	
5. „ ears with abnormal band in post-nasal space	—	—	0	1	—	1	1	
6. Abnormality of the auricle	1	—	1	2	—	2	3	
7. Foreign body in the ear		2	3	6	9	15	18	
Less referred to under other headings	1	—1	—2	—3	—4	—7	—9	
8. Foreign body in the nose rhinolith	—	—	0	1	—	1	1	
9. Cerumen	12	10	22	3	8	11	33	
10. Furunculosis	—	—	0	—	2	2	2	
11. Eczema of auricle	—	—	0	1	1	2	2	
12. Hæmorrhages in membrane with adenoids	—	—	0	1	—	1	1	
13. ? Congenital perforation in Shrapnell's membrane	1	—	1	6	1	7	8	
14. Acute middle ear inflammation	—	—	0	1	1	2	2	
15. Depressed membranes and deafness, with enlarged tonsils and adenoids	3	8	11	26	27	53	64	
16. „ „ with adenoids	11	12	23	36	18	54	77	166
17. „ „ no enlarged tonsils or adenoids	7	1	8	9	8	17	25	
18. Middle ear Sclerosis	—	1	1	—	5	5	6	
19. Chronic middle ear suppuration with enlarged tonsils and adenoids	3	2	5	7	8	15	20	
20. „ „ with adenoids	4	9	13	19	19	38	51	
21. „ „ with enlarged tonsils, no adenoids	—	—	0	—	1	1	1	88
22. „ „ no enlarged tonsils, or adenoids	5	3	8	6	2	8	16	
23. Post-suppurative middle ear trouble with enlarged tonsils and adenoids	2	4	6	21	28	49	55	
24. „ „ with adenoids	10	13	23	56	37	93	116	
25. „ „ with enlarged tonsils, no adenoids	—	—	0	5	2	7	7	
26. „ „ with purulent discharge from the nose, no enlarged tonsils or adenoids	—	—	0	—	1	1	1	247
27. „ „ no enlarged tonsils or adenoids	15	14	29	28	11	39	68	
28. Internal ear deafness	—	—	0	1	—	1	1	
	159	149	308	387	305	692	1000	

On referring to the first Classification—

(i) The ears were normal in	432
(ii) The external ear was affected in	49
(iii) The middle ear	518
(iv) The internal ear	1
	1,000

The HEARING was more or less deficient in 520; that is to say, that with one or both ears they were unable to pass the whispered voice test at eighteen feet. Many of these were unnoticed by the teachers, the deficiency only being noticed on examination. It may be thought this number should correspond with the table above, but some, although they had definite signs of old suppuration, were able to pass the test.

It is interesting to consider some items in the table more in detail :—

5.—THE ABNORMAL BAND IN THE POST-NASAL SPACE has a vertical membranous septum running downwards for a slight distance from the septum. There was no history, and it was not causing any symptoms.

6.—THE ABNORMALITIES OF THE AURICLE were slight :—

1.—A boy aged 6 years.	Eversion of the concha on the left side only.
2.—A girl aged 13 ,,	,, ,, ,,
3.—A boy aged 7 ,,	A square-shaped left auricle. The antihelix thin and expanded. No lobule. The right side was normal.

7.—THE FOREIGN BODIES IN THE EAR numbered eighteen; nine of them were suffering from other troubles, six were in males, twelve in females, Nine were in the right ear and nine in the left.

MALES.

1.—Aged	9 years,	A piece of a wooden match half-an-inch in length .	Right ear.
2.— ,,	6 ,,	A pea	Left ,,
3.— ,,	10 ,,	A piece of folded paper .	Left ,,
4.— ,,	11 ,,	A piece of cotton wool .	Left ,,
5.— ,,	12 ,,	A small splinter of wood .	Right ,,
6.— ,,	12 ,,	A pea	Right ,,

FEMALES.

1.—Aged	5 years,	A piece of folded paper .	Right ear.
2.— ,,	7 ,,	Ditto do. .	Left ,,
3.— ,,	7 ,,	A blue bead . . .	Left ,,
4.— ,,	9 ,,	Ditto . .	Left ,,
5.— ,,	9 ,,	A piece of cotton wool .	Left ,,
6.— ,,	9 ,,	Ditto do. .	Right ,,
7.— ,,	10 ,,	Ditto do. .	Left ,,
8.— ,,	10 ,,	Ditto do. .	Left ,,

9.—Aged	10 years,	A piece of cotton wool	.	Right ear.
10.— „	11 „	A dried pea . . .	.	Right „
11.— „	12 „	Ditto . . .	.	Right „
12.— „	12 „	A piece of dried grass .	.	Right „

8.—Rhinolith in the nose. This was present in the left side of a boy aged six years. There was no pain or irritation. The nucleus could not be made out.

12.—Hæmorrhages in the membrane. There were numerous hæmorrhagic spots in the posterior and antero inferior segments of the left membrane with injection of the malleal vessels. The boy had received a blow on the ear immediately before examination. Adenoids were present.

14.—? Congenital perforation in Shrapnell's membrane. In these cases a perforation was present in one or both ears, but no sign or history of discharge or of pain could be obtained. The "query" is placed on account of the difficulty of obtaining an accurate history. The fact that some were somewhat deaf and that others had adenoids with depression of the membrane, assists in adding to the doubt.

1.—A boy aged 9 years.	In right ear only. Otherwise normal.
2.— „ „ 9 „	In both ears. Membranes depressed with adenoids, but passed hearing test.
3.— „ „ 11 „	In both ears. Tonsils and adenoids, but passed hearing test.
4.— „ „ 12 „	In both ears. Right membrane depressed, tonsils and adenoids. Hearing deficient in right.
5.— „ „ 12 „	In both ears. Both membranes depressed, tonsils and adenoids. Hearing deficient in left.
6.— „ „ 12 „	In both ears. Adenoids. Hearing deficient in right.
7.— „ „ 13 „	In both ears. Otherwise normal.
8.—A girl „ 13 „	In both ears. Both membranes depressed, tonsils very large, slight adenoids. Hearing deficient in both.

14.—Acute middle ear inflammation. The number is very small. This is accounted for by the fact that such cases are sent to the infirmary as soon as they are observed, and

were, therefore, not well enough to come for examination. It must also be noted that many children had a history of earache, but no sign was present, and the hearing test was passed.

15, 16, 17.—Depressed membranes with deafness. It is interesting to note that out of 166 cases, 141 had adenoids; the remaining 25 were due in the most parts to cold, recent or remote.

18.—Sclerosis. The six cases noted were all females. In each the deficiency of hearing was marked, the membranes were not depressed and little improvement followed on inflation. A query should perhaps be placed before them.

1.—Aged	8 years.	Hearing deficient in both ears.		Slight adenoids.
2.— „	10 „	„	„ „	Slight adenoids and slightly hypertrophied tonsils.
3.— „	13 „	„	„ „	No adenoids.
4.— „	13 „	„	„ „	Adenoids and hypertrophied tonsils with true hypertrophy of both inferior turbinals, right side especially.
5.— „	14 „	„	„ in right ear.	No adenoids.
6.— „	15 „	„	„ in left ear.	Large mass of adenoids.

19, 20, 21, 22.—Chronic middle ear suppuration. Eighty-eight children were suffering from chronic suppuration from one or both ears. It is needless to point out that all these, while having deficient hearing, were also in danger of their lives. At the very least six wanted the complete post-aural operation performed at once; curetting and ossiculectomy were required in many; seventy-one had adenoids. The following classification includes all the cases:—

Both ears discharging . . .	16
Right ear „ . . .	46
Left „ „ . . .	26

Cases requiring the complete post-aural operation. 6.

1. A girl aged 10 years. *Right ear*—A scar was present over the mastoid region. The ear had discharged for a long time. There was total loss of the membrane; the handle of the malleus being dissected out. A large mass of adenoids was present. *Left ear*—A cicatrix in the posterior superior segment.

2.—A girl aged 11 years. *Right ear*—A depressed scar was present over the mastoid. The ear was discharging. There was total loss of the membrana tensa. The handle of the malleus was dissected out, its tip had been lost. *Left ear*—In same condition, but there was not a mastoid scar.

3.—A boy aged 12 years. *Both ears* were discharging profusely. There was a bony protuberance from the posterior deep meatal wall on both sides. Details of the middle ears could not be accurately determined, but a perforation involving the posterior inferior segments could be seen.

4.—A boy aged 13 years. *Left ear*—Discharging a long time. No sign of ossicles or membrane. Marked sagging of the posterior superior deep meatal wall. *Right ear*—Discharging. Total loss of membrane. Handle of malleus dissected out. A granulation coming from the anterior superior segment.

5.—A boy aged 8 years. *Right ear*—Discharging freely. A scar was present over the mastoid. The superior half of the middle ear was obstructed by firm tissue; a granulation appearing below. *Left ear*—normal.

6.—A boy aged 9 years. *Right ear*—Discharging. Marked prolapse of the posterior superior deep meatal wall. No details to be made out in middle ear. *Left ear*—Inferior cicatrix. Had had adenoids removed.

PERFORATION IN SHRAPNELL'S MEMBRANE. 5—

3 in the right ear, 1 with granulations.
1 with posterior inferior cicatrix in the left ear.
1 with posterior perforation but no discharge in the left ear.

2 in the left ear, 1 with a posterior perforation and discharge in the right ear.

PERFORATION INVOLVING THE POSTERIOR SUPERIOR SEGMENT WITH LOSS OF THE DESCENDING ARTICULAR PROCESS OF THE INCUS. 11—

5 in the right ear, 2 with a cicatrix in posterior segment, and loss of process in the left ear; 1 with a posterior inferior perforation with discharge in the left ear.

6 in the left ear, 1 with granulations and loss of the handle of the malleus on that side, and a posterior inferior perforation with granulations in the right ear; 2 with an inferior cicatrix in the right ear.

PERFORATION IN MEMBRANA TENSA. 66—

Both ears were discharging in 10.
The right ear was „ „ 36.
The left „ „ „ 20.

BOTH EARS.

RIGHT.	LEFT.
1.—Total loss of membrana tensa, and of tip of handle of malleus.	Total loss of membrana tensa, and of tip of handle of malleus.
2.—Total loss of membrana tensa.	Total loss of membrana tensa.
3.—Ditto do.	Ditto do.
4.—Ditto do.	Ditto, and loss of tip of handle of malleus.
5.—Inferior kidney-shaped perforation.	Inferior kidney-shaped perforation.
6.—Ditto do.	Ditto do.
7.—Anterior inferior perforation.	Inferior kidney-shaped perforation.
8.—Inferior perforation.	Inferior perforation.
9.—Anterior inferior perforation.	Anterior inferior perforation,
10.—Posterior superior perforation.	Posterior inferior perforation,

RIGHT EAR DISCHARGING.

A.—*Cases in which there had been suppurative trouble in the left.* 15—

RIGHT.	LEFT.
1.—Inferior perforation with granulations.	Cicatrix with loss of articular process of incus.
2.—Ditto do.	Ditto do.
3.—Inferior perforation.	Inferior perforation ; no discharge.
4.—Ditto.	Ditto do.
5.—Ditto.	Inferior cicatrix.
6.—Inferior kidney-shaped perforation.	Posterior cicatrix.
7.—Ditto do.	Inferior perforation : no discharge.
8.—Anterior inferior perforation.	Posterior superior cicatrix.
9.—Ditto do.	Anterior inferior cicatrix.
10.—Ditto do.	Ditto do.
11.—Ditto do.	Posterior inferior cicatrix.
12.—Ditto do.	Inferior perforation : no discharge.
13.—Posterior perforation with granulations.	Inferior cicatrix.
14.—Posterior inferior perforation.	Posterior inferior cicatrix.
15.—Large loss of membrana tensa.	Posterior superior cicatrix with loss of tip of articular process of incus, the remains displaced forwards.

B.—*Cases in which the right ear only was affected.* 21—

Inferior perforation	3
Kidney-shaped perforation	2
Anterior ,,	6 ; 1 with granulations
Anterior inferior ,,	4
Anterior superior ,,	1 with granulations
Posterior ,, ,,	1
Large loss of membrana tensa	4 ; 2 with granulations 1 ,, ,, and loss of handle of malleus.

LEFT EAR DISCHARGING.

A.—*Cases in which there had been suppurative trouble in the right.* 13—

LEFT.	RIGHT.
1.—Inferior perforation.	Anterior cicatrix.
2.—Ditto.	Ditto.
3.—Ditto.	Posterior perforation; no discharge.
4.—Ditto, with granulations.	Inferior cicatrix.
5.—Anterior inferior perforation.	Anterior inferior cicatrix.
6.—Ditto. do.	Ditto do.
7.—Ditto do.	Anterior cicatrix.
8.—Ditto do.	Inferior perforation ; no discharge.
9.—Posterior perforation.	Ditto do.
10.—Posterior inferior perforation.	Posterior superior cicatrix.
11.—Ditto do.	Ditto do.
12.—Large loss of membrana tensa.	Posterior cicatrix ; loss of articular process of incus.
13.—Ditto do.	Posterior superior cicatrix.

B.—*Cases in which the left ear was affected.*

Inferior perforation	2 ; 1 with granulations.
Anterior inferior perforation	1
Anterior superior ,,	1
Posterior ,,	2
Posterior inferior ,,	1

GRANULATIONS IN THE MIDDLE EAR. 13—

In both ears, 1.
In right ear, 9.
In left ear, 3.

23, 24, 25, 26, 27.—POST SUPPURATIVE MIDDLE EAR. Total 247. An extraordinary large proportion. The number of those who had adenoids was 171.

Both ears had been affected in 110
Right ear only „ „ 81
Left „ „ „ 56
A detailed account of them will be extremely tedious so that only a few of the details will be given.

Perforation or cicatrix in Shrapnell's membrane. 28—

In both ears, 9.
In right ear, 14; 7 of which had had suppurative trouble in the left.
In left ear, 5; 4 „ „ „ „ „ right.

Loss of the articular process of the incus. 28—

In both ears, 6; 1 with an adhesion from remains of incus to head of stapes.
In right ear, 11; 1 with an adhesion from remains of incus to head of stapes.
5 had had suppurative trouble in the left.
In left ear, 11; 9 of which had had suppurative trouble in the right.

Patent dry perforations. 57—

In both ears, 7.
In right ear, 27.
In left ear, 23.

White deposits in the membrane. 13. These were chiefly seen in connection with suppurative trouble.

In both ears, 1.
In right ear, 6.
In left ear, 6.

Exostosis—

A boy aged 9 years with deficient hearing and healed suppuration in both ears and with adenoids, had a small sessile rounded exostosis growing from the posterior deep meatal wall.

If the present and past suppurative troubles be considered together, it will be seen that 335 children were affected.

In both ears, 126.
In right ear, 127.
In left ear, 82.

Perforation or cicatrix in Shrapnell's membrane. 33. Omitting the 8 ? congenital cases.

In both ears, 9.
In right ear, 17.
In left ear, 7.

Caries of the articular process of the incus. 39—

In both ears, 8.
In right ear, 14.
In left ear, 17.

Adenoids present in 242.

28.—INTERNAL EAR DEAFNESS.

Only 1 case was observed. A boy aged 14 years, could not pass the hearing test with the right ear. The membrane appeared normal. There was no sign of congenital syphilis. He had had the tonsils and adenoids removed. He had had scarlet fever. With the tuning fork air conduction was better than the tone, and when placed in mid line of skull, the sound was referred to the left ear.

All cases of severe deafness are not admitted to the schools, but are sent elsewhere for lip reading tuition. This accounts for their absence.

NASAL AND NASO-PHARYNGEAL AFFECTIONS.—Many children suffered from "*running nose.*" The discharge is apparently very irritating, as many suffered from an eczematous condition of the upper lip as a result. Further research as to this condition is necessary. It may be noted here that cracks, edged with white sodden epithelium at the angle of the mouth, were also common and could not be accounted for. The one case of rhinolith has already been referred to.

True or lobulated hypertrophy of the inferior turbinals.—This was noticed in 5 cases.

1.—A boy aged 11 years, with post-suppurative middle ear trouble on both sides and adenoids. The hypertrophy affected both inferior turbinals, extending to the posterior end on the left side but not on the right.

2.—A girl aged 13 years, with commencing sclerosis and enlarged tonsils and adenoids. Both inferior turbinals affected, the right especially.

3.—A boy aged 11 years, with depression of both membranes and enlarged tonsils and adenoids. Both inferior turbinals affected.

4.—A boy aged 14 years, with depression of both membranes and adenoids. The anterior end of both inferior turbinals affected.

5.—A boy aged 14 years, with depression of both membranes and enlarged tonsils and slight adenoids. Both anterior ends of the inferior turbinals affected, the left especially.

False or smooth hypertrophy of the turbinals.—This was especially marked in 3 cases.

1.—A girl aged 12 years, with depression of both membranes and slight adenoids. The middle and inferior turbinals on both sides were affected.

2.—A boy aged 11 years, with post-suppurative trouble on both sides but no adenoids. Both sides were affected, the right especially.

3.—A girl aged 11 years, with depression of both membranes and enlarged tonsils and adenoids. Both middle turbinals were affected.

Pus in the nose.—Observed in 3 cases.

1.—A girl aged 10 years, with post-suppurative trouble (loss of articular process of incus) in both ears, but no adenoids. A purulent discharge was present on the right side, with eczema of the vestibule.

2.—A boy aged 8 years, with post-suppurative trouble in both ears, but no adenoids. The nose was broadened, both middle turbinals were enlarged with muco pus in the middle meatus of both sides.

3.—A boy aged 7 years, with post-suppurative trouble in both ears, but no adenoids. The turbinals were all enlarged on both sides. A muco purulent discharge was present.

These cases suggested nasal and aural infection during some specific fever. (The last two cases are classed in the main classification, under other headings.)

Spurs and deviation of septum.—Slight spurs and deviations were common, but were only marked in 2 cases, in both of which the block was on the left side.

The band in the post-nasal space has already been referred to.

Adenoids.—It is a mistake to think that all children have them; in many the vault of the naso-pharynx looked and felt perfectly smooth. It is not too much to say that the healthiest looking children were, as a rule, quite free. They were present in 434, although slight in amount in 39. They were associated with enlargement of one or both tonsils in 174 instances. Some aural trouble was present in 394. On the other hand, in 40 the ears were normal.

Hypertrophied tonsils, one or both, were seen in 231 children.

A mucous cyst in the right tonsil was found in a boy aged 8.

There is no disguising the fact that the report is a startling one, and clearly shows that the subject should be thoroughly taken in hand. I have endeavoured to ascertain from our colleagues all over the world what steps are taken in the matter, and I here wish to give my cordial thanks to those who have so kindly written to me. Dr. Arthur Hartman, of Berlin, informed me that in the majority of the large cities in Germany, school physicians are appointed to the schools to examine chiefly the eyes and ears, and to see that treatment is applied when necessary. (This step was taken by the German Government at Dr. Hartman's suggestion.) Dr. Rohrer, of Zurich, sent me the official school pamphlet of the Canton of Zurich (Bericht über die Verhandlungen der Züricherischen schulsynode, 1901), in which is a report of the medical examination in the years 1899 and 1900, of the children who have reached the age for compulsory education. 108,297 children were examined, and 117 per 1000 were found to be in some way affected as to their ears. No details as to the method of examination were given.

Dr. Lagerlöf, of Stockholm, stated that in that city in 1901, two aurists were appointed by the town government to examine all the poor school children. The schoolmasters call on the parents of those affected to inform them of the necessity for treatment.

Professor W. R. Smith, the Medical Officer of the School Board for London, informs me that, at present, there are no measures taken for the examination and treatment of the eyes and ears of the children in the schools of the Board.

It is quite clear therefore that in some few countries, Germany, Switzerland, and Sweden, for examples, the importance of the subject has been recognised, and as far as possible dealt with. It is earnestly to be hoped that more will follow their example."

Mr. Cheatle, in opening the discussion, said that the objects which he had in view in undertaking the investigation were twofold—first, to ascertain the amount of ear

disease in the children of the poorest class; and secondly to draw attention, if necessary, to the subject in the hope that steps would be taken to deal with it. The classification of the lesions met with presented difficulties which were very great and he had no doubt that criticism might justly be directed against the one adopted, and also, perhaps, against the method of examination. For instance, objection might be taken to the use of the term "normal" which was used in the report to mean that the membranes appeared normal, and that the hearing was sufficient to pass the whispered voice test at a distance of eighteen feet. The fallacies of this test were alluded to in the report, but in the circumstances it was the only one possible in the great majority of cases and it was of the greatest value in picking out children with diminished hearing. For purposes of comparison it would be of great interest, he said, if an investigation could be conducted amongst children of the better classes who lived under better conditions. The schools at Hanwell, however, were practically perfect from a hygienic point of view and the lives of the children were essentially healthy. He regretted that he had not been able to classify those who had lived almost all their lives in the institution from those who had come as temporary lodgers. Inability to pass the test with one or both ears was present in 520 out of the 1000 children. Many of these, especially in the group of depressed membrane associated with adenoids, had not been noticed by their teachers to be deaf, the deficiency only being detected upon examination. This point was of the utmost importance, for if children so affected were to be saved from deafness in later life childhood was the time for treatment. It amounted to this, that unless children were systematically examined any deficiency in hearing would pass unnoticed and untreated until it became so great as to interfere with the future work of their lives and then perhaps treatment would be of little avail. Mr. Cheatle considered that all children, whatever their station in life, should at some period be thoroughly examined; the period that would be best for the purpose would be open to discussion, but he suggested the age at

which they should be able to give intelligent and trustworthy answers to simple tests, unless anything amiss in the hearing had been noticed earlier. Passing to further details in the report he said that the comparatively large number of foreign bodies in the ears was noteworthy; 12 of the 18 cases occurred in girls. The children were all unconscious of their presence. Mr. CHEATLE said that he was not positive whether congenital perforation in Shrapnell's membrane did occur; the 8 instances recorded suggested that it did. The association of depressed membranes with deafness and adenoids was well marked. Out of 166 cases, in 141 there were adenoids. Of the cases classified as sclerosis deafness was present in all; the membrane appeared to be normal and slight improvement resulted from inflation. They all occurred in girls. It was little less than appalling to realise that 335 of the 1000 children examined were, or had been, the subjects of discharge from one or both ears; 88 of these might be spoken of as walking on the edge of a precipice and 6 as being at least half over. Of the 88 cases in which suppuration was present in 71 there were adenoids, and in 13 there was granulation tissue in the ear. The number who had previously suffered from chronic middle-ear discharge was 247; of these 171 had adenoids and a dry perforation was present in 57. It appeared from the statistics that the left ear was less liable to infection than the right, for out of the combined past and present suppurative cases, numbering 335, both ears were affected in 126, the right in 127, and the left in 82. The association of adenoids with ear disease was most marked; they were present in 434 children, of whom 394 presented some aural troubles. Mr. CHEATLE finally raised the question as to what steps should be taken in the matter by the authorities. To his mind it was a matter that they could not afford to neglect; it was of no use to leave it in the hands of the parents, for many cases of commencing deafness could only be detected on careful examination, and, moreover, childhood was the time for treatment. He recommended that the systems employed in Germany, Switzerland, and Sweden should be investigated

and reported upon. The one now in force in Germany would probably be the most applicable, as it dealt with a large population. He had heard from Dr. Arthur Hartmann, of Berlin, that in the majority of the large cities in Germany physicians were appointed to the schools to examine especially the eyes and the ears and to see that treatment was applied when necessary. From Dr. Guye, of Amsterdam, he had heard that there was a movement to have medical officers for similar purposes in the schools of Holland. The carrying out of any such system would necessitate having a large number of sufficiently trained men. At present, the majority of the examining bodies in this country did not recognise that such a thing as a disease of the ear ever occurred and that otology was a necessary part of a student's curriculum, yet diseases of the ear, Mr. CHEATLE did not hesitate to say, caused an immeasurably greater amount of loss of health and life than did those of the eye.

Mr. GEORGE MURRAY stated that about a year ago he made an examination of 400 children belonging to one of the parochial schools at Greenwich, with a view to finding out how many of them were deaf; what was the cause of the deafness; and what was being done for them?

Of the 400 children he examined 194 of them were boys and 206 of them were girls, their ages ranging from 6 to 14, with an average age of 9½.

Of the 194 boys, 50 had had measles, 14 scarlet fever, one both these complaints, one diphtheria, two meningitis, one was the subject of congenital syphilis, 5 had had severe attacks of influenza, deafness following in one case, and one was subject to epileptic fits.

Of the 206 girls examined, 79 had had measles, 5 scarlet fever, one both these complaints, 5 diphtheria, one mumps, two typhoid fever, 11 influenza, and one had a cleft palate.

Four boys had adenoids and large tonsils, and five girls the same, but as their hearing was not affected in the least, these 9 cases did not appear again in his subsequent lists of adenoids and large tonsils.

Of the 400 children he examined he found 43 of them were deaf—18 boys and 25 girls.

He examined the children with an ordinary watch, taking 36 inches as the standard.

The children were examined singly and alone. He began by talking to them about their age, previous history, and so forth, and then taking the watch out of a side pocket he held it at right angles to the patient, holding it in his hand half-closed so that they never saw it, he then asked them what they heard? He found this method better than the whisper.

All those that could not hear the watch clearly at 36 inches he put on one side, and when he had completed the general testing he examined these cases again thoroughly.

Of the 18 boys who were deaf, 7 of them were suffering from chronic suppurative catarrh, 5 of these had a perforation on either side, one a perforation in the right tympanic membrane and a scar on the left, and one a perforation in the right membrane only; one of these cases was directly attributable to scarlet fever.

Three of these cases of chronic suppurative catarrh had adenoids and large tonsils.

Three boys were suffering from chronic non-suppurative catarrh, one of which cases was the direct result of influenza.

Four boys had adenoids, 3 adenoids and large tonsils, and one was a case of cerumen only.

Of the 25 girls who were deaf, 5 were suffering from chronic suppurative catarrh, 4 had a perforation in the right tympanic membrane, and one a perforation on the left side with a scar on the right membrane, this last child being very strumous.

Three of these cases of chronic suppurative catarrh, including the strumous child, had adenoids; one of the 5 cases was directly attributable to scarlet fever, and one to influenza.

Three girls had chronic non-suppurative catarrh; in one of of these cases the tonsils had been removed, there were no adenoids, and he could not trace the original cause of the

mischief. In the second case there was a large perforation, and in the third a history of scarlet fever.

Sixteen of the girls had adenoids, and in 7 of these the tonsils were enlarged. One girl had eczema spreading in to the meatus. In no case did he find any internal ear trouble.

He examined all these children carefully, and was convinced that he found out all those who were appreciably deaf. To the best of his ability he determined the cause, but experienced great difficulty in getting a good illumination. Where necessary he used the tuning-fork and Politzer's bag. With the latter he got considerable improvement at the time, and this is recorded in his notes, but he did not think it necessary to bring it forward in this account.

No treatment was being adopted in a single case, and many of them, no doubt, were steadily getting worse.

He would have examined a great many more cases, but it was impossible to obtain the permission of the Board of Guardians.

Forty-three cases of deafness in 400 is at the rate of 107½ in 1000.

Mr. CHEATLE in his report stated that Dr. Rohrer gives the number of deaf children in Switzerland as 117 in a 1000, with which his (Mr. MURRAY'S) statistics (although on a very small scale in comparison) tallied fairly well.

Dr. LITTELJOHN said that he had a few remarks to make, as Medical Officer of the School, with reference to the bearings of Mr. CHEATLE'S report upon the particular school with which it dealt. He would like to see worked out as a sequel to Mr. CHEATLE'S paper the question whether residence in a large barrack school had any influence in increasing the number of children suffering from adenoids, enlarged tonsils, and ear disease. He had been under the impression it was not so, but he was astounded at the number of deaf children in the school. One important point which Mr. CHEATLE'S paper did not touch, was that of length of residence in the school. The simple age of the child was no indication as to how long it had been in the school. The bad condition of the ears appeared from the tables to increase

with the age of the children. If Mr. CHEATLE would supply him with a list of the children he had tested, he would put against each the period during which he had been in the school. By some people a "set" had been made against such schools, and an endeavour was being made to get rid of them. He was not a strong advocate of that style of school, as it had many defects, but the question arose, what would be the best thing for children suffering from various forms of suppuration of the middle ear, assuming that those conditions were not increased in the school?

Would it be better for them to be boarded out or to be placed in separate homes? He thought the argument was in favour of the large schools, because it would be impossible for the authorities and the specialists to attend to the boys if they were scattered in homes. He wished next to correct a little mistake in the Report. In the paragraph dealing with the middle ear suppuration, Mr. CHEATLE said he saw very few cases of acute disease, because cases of that description were sent to the infirmary for treatment, and thus escaped his notice. That was quite a mistake. Only two cases went to the infirmary, whilst Mr. CHEATLE was conducting the examination.

As a matter of fact there was no acute case which Mr. CHEATLE did not see. Very few children in the school suffered from ear-ache before the appearance of the discharge. If a child had a primary attack of inflammation of the tympanum he would hardly get perforation of the membrane without suffering much pain. He thought in many of the children found affected they had perforations before coming into the school. In the case of the 102 children who had entered the school since Mr. CHEATLE'S examination, he had adopted Mr. CHEATLE'S methods, whispering, &c., and though the results might not correspond with what Mr. CHEATLE'S would have been, he had found that 47 of the 102 were deaf. Of those 24 were deaf in both ears, 23 in one, 57 had discharge from their noses, 8 had suppurative discharge from the ear, 9 others said they had previously had ear-ache. Those 102 entered in three months, so that four times those

figures would represent a year. He was pleased that the examination by Mr. CHEATLE had been made, although, perhaps, it might be held not to reflect much credit upon him (Dr. LITTELJOHN). But he did not claim to be a specialist. He trusted the examination would be the beginning of one on a large scale in many other schools, and hoped a comparison would be made between the children of Poor Law schools and those of other schools.

Dr. PERMEWAN emphasised the great practical as well as scientific value of Mr. CHEATLE'S observations. They would be of the greatest possible value as established facts in approaching the authorities in charge of children. Mr. CHEATLE had said rather pessimistically that he expected little, if any, result from bringing these considerations before the notice of School Boards and like bodies. That had also been Dr. PERMEWAN'S experience in the past; but as a member of a City Council which would probably become ere long an authority for education, he would do his best that something should be done in the future. He wished to draw attention to some observations of his own, published six years ago, which approached the question from the point of view of the relation between defects of hearing and mental deficiency in children. Perhaps he might be allowed to quote from his paper some passages of interest.

"The observations of many physicians have shown that, of children supposed to be stupid and backward, a very large proportion suffer from a condition which interferes with a normally acute sense of hearing. Thus Gellé has found that of 20 children denominated 'bad' only 6 had a normal amount of hearing power; while of those styled 'good,' every one had acute and useful ears. . . . The physical conditions which produce deafness produce other effects besides of almost equal importance.

"In a report presented to the Education Department by Sir JAMES CRICHTON-BROWNE on overpressure, the prevalence of headaches and kindred trouble is shown to be very common in the children of Board Schools. There can be no doubt that these symptoms are often not really the result of

overpressure in the strict sense, but are due to the existence of throat and nose disease, easily recognised by the trained observer, and capable of medical treatment and cure. Professor Guye, of Amsterdam, has invented the name of aporexia to designate the train of symptoms embracing headache and inability to fix the attention, due to adenoid growths of the naso-pharynx. Professor Guye has found these troubles in a large number of so-called 'backward' pupils, and has had the satisfaction of watching the disappearance of the symptoms as the result of appropriate treatment.

"The exact facts on these points of deafness and stupidity can only be arrived at by careful examination. Thus of 1055 children, Von Ruckard found 22 per cent. with marked deafness; Dr. Weil, of Stuttgart, found it in 30 per cent. The problem has not been marked out as regards English school children. With a view to throw some light on the question, I examined the children attached to one of the industrial schools under the control of the Liverpool School Board.

"I examined altogether 203 children; their ages varied from 10 to 15; most were between 12 and 14. Fifty were girls and 153 boys. They were all of the neglected class, such as is found in industrial schools generally.

"*Method of Examination.*—To estimate hearing power I employed a watch of which the normal hearing distance in the room used for examination was 60 inches. Each child was tested carefully, and when any doubt existed, repeatedly. I am conscious of the difficulty of accurately estimating the hearing of children; but no doubt these errors balance one another fairly well. After testing the hearing I examined both ears in the usual manner, to discover, if possible, the cause of any deafness that existed, and also to discover the presence or absence of suppuration which I noted in each case. I then examined the mouth for large tonsils, and the nose for anything abnormal," and I estimated the presence or absence of adenoids.

"*Estimation of the Mental Condition of the Children.*—To obtain something like a numerical result, I divided the

children into three classes, according to the report of their teachers, and called them respectively, *good*, *fair*, and *bad*, not in a moral but in an intellectual sense. In order, however, not to rely absolutely on the statements of others, I kept, on a separate table, an estimate of my own, made at the time, as a check.

"*Statement of the Hearing Power.*—I examined the hearing power of both ears, recorded them separately, and then took the mean of the two to represent the comparative hearing power of the child. The result is expressed in inches in my second column. I then added together the mean hearing distance of the three classes of children respectively, divided each by the number of the children of that class, and thus obtained the average mean hearing distance of the good, fair, and bad children respectively.

"*Results.*—Of 203 children in the school 62 were described as bad. It must be borne in mind that this was an industrial school where all the most neglected children of the town are taught.

"Of these 62 the average mean hearing distance was 31¼ inches.
"Of 52, called *fair*, the average mean hearing distance was 47⅓ inches.
"Of 89, called *good*, the average mean hearing distance was 51 inches.

"Then the average mean hearing distance of the very backward children was only half of the normal; of the fair children little more than three-quarters; of the good it was more than five-sixths of the normal.

"Of the fourteen worst children in the school, the hearing distance was, in inches:—

Right Ear.	Left Ear.
12	12
10	8
Contact	Contact
Contact	Contact
Very deaf	Very deaf
30	30
Deaf to conversation	Deaf to conversation
Contact	12
9	9
40	40

Right Ear	Left Ear
30	30
60	40
30	30
Contact	Contact

"I will compare those with ten consecutive good children taken at random.

Right Ear	Left Ear
60	60
40	40
50	60
60	60
60	60
60	60
60	60
60	60
40	40
40	40

"As regards adenoids there were found

Bad in 28 out of 62 $= \frac{4}{9} = 45$ per cent.
Fair in 16 out of 52 $= \frac{4}{13} = 30$ per cent.
Good in 19 out of 89 $= \frac{4}{13} = 21$ per cent.

"Such is a brief summary of my results. I do not wish to pretend that they are mathematically accurate, though for convenience put in mathematical form, but at least they show a very constant relation in these Board School children between deafness and stupidity. I would suggest that the attention of teachers ought to be directed to these points, and that they be instructed, if they have any reasonable ground, to place their children under the care of some of the aural surgeons of the city for diagnosis and treatment."

Dr. MacNaughton-Jones said that in determining to take part in the discussion he was actuated by a considerable experience of school children, as for many years he had a considerable number of school children attending his clinic, *i.e.*, children from the schools of some twenty unions, various religious schools, and a large reformatory. It was many years since he drew attention to the large number of children requiring treatment for various forms of ear trouble. A most important point was that alluded to by Mr. Cheatle, namely, inquiry into the causes of deafness in a large

number of ear cases, such causes being undoubtedly associated with the ordinary diseases of childhood. He had looked over an old table of his, of 1,600 cases, and found that in 418 the cause was attributed to scarlet fever, and in 74 to measles. Of other incidental affections there were 7 of diphtheria, 18 whooping cough, 2 mumps, 7 congenital, 39 associated with dentition, and 1 attributed to instrumental delivery at birth. There were also cases which were described under the head of heredity, numbering 26. Under a separate heading he found 287 adenoid cases. Another table showed 796 cases, and in that there were recorded 204 as arising from scarlet fever, and 148 from measles. There were 95 cases of dentition, adenoids, whooping cough, diphtheria, and instrumental interference at birth. The proportion of cases in which deafness or ear disease was due to the affections of childhood appeared very large, but they could be verified in any aural clinic. He did not know what was the custom in the London Otological clinics, but in his old one the ages of all patients were tabulated. He believed valuable additional information could be gained by ascertaining from the various aural departments of the general and special hospitals the proportions of cases attending at different ages, and the number in which deafness was assigned to a disease of childhood. He thought there would be found to be a large number of young children. A very important point was the question of deaf-mutism. He did not know how late deaf-mutism might commence, *i.e.*, how long a child might hear and then get so affected by serious ear disease as to become deaf and dumb. But he could recall the fact that during his years of association with Otology different parents had assured him that the child brought with some definite form of ear trouble did hear well for a certain time after birth, but subsequently had become a deaf mute. Hartmann gave cases of children after 14 or 15 years of age becoming deaf mutes. He knew of cases being recorded in which that occurred up to seven years of age. Another important point was the question of heredity in its relation to syphilis, and the development of

deafness during puberty. His experience had been that in many cases of what was looked upon as undoubted heredity, the consequences of syphilitic taint in the ear had not been recognised; there had been no pain, no objective symptoms, but a slow progressive deafness occurring towards puberty. Then at puberty there came on the characteristic ophthalmic symptoms, *i.e.*, the ground-glass cornea, the choroidal changes, and, side by side, the deafness. He thought by early inquiry into the condition of the hearing in a child, especially where there were evidences at birth, such as cuticular or plantar signs, in the skin, and later on the characteristic dentition, proper treatment could be directed, with the view to the prevention of deafness.

With regard to the possibility of contagion in schools in connection with aural trouble, he alluded to the way in which discharges were neglected, and thought mischief was quite possible through that neglect. There was no doubt also that the presence of adenoids exerted a deleterious influence, not only on hearing, phonation, respiration, but also on the mental condition.

Every one knew the stupid look of the child affected with adenoids. With regard to the method of testing the hearing, he thought that for a child one could not rely upon any one test. It was best to combine the watch, the tuning fork, and whispering. He would make a further suggestion to that put forward by the last speaker, namely, that a committee be appointed to push the matter forward, and gradually collect statistics which should show the Government the importance of going into the question and thus making it not merely a local question but a State question. Just as it was important that the eye should be tested, so was it that the condition of the ear should be investigated, and that proper inspectors should be appointed to examine the ears wherever a great number of children were congregated together during a certain period of life.

Dr. W. Milligan said the Society was much indebted to Mr. Cheatle for the elaborate report which he had presented on a subject which was not only of local but of national importance.

The prevalence of ear disease was known by all who held hospital appointments, as well as by those who had much to do with young children. But he did not think every one appreciated the enormous amount of ear disease prevalent in the country. He had no conception before that out of 1,000 children, nearly 500 would be found to have ear trouble of some sort. But as those statistics were compiled from children of the poorest class, it would not be fair to regard that as a normal proportion. He had been looking through a number of case books recently, dealing with patients from 3 to 16 years old, and it was clear that a larger number of patients under 16 attended than over that age. He had not analysed the results in the scientific way which Mr. CHEATLE had, nor would he discuss them at that time. But he was anxious that the subject should not be left in its present position. The Society should certainly take further steps in the matter. General deductions could not very well be based upon 1,000 cases, but some indication could be obtained from them, and he had framed a resolution which perhaps the President would allow him to read, because it was important that various large centres throughout the kingdom should analyse the figures available in the same way as Mr. CHEATLE had. Based upon such analysis representations could ultimately be made through the proper authorities. Most of the cases of ear disease in children could be cured, but in many instances they could not be if allowed to proceed to adult life. No one could deny the importance of the sense of hearing from all social and other points of view, and he thought children, especially those in the lower grades of society, should be protected by an efficient State-directed investigation at the schools. His suggested resolution was, "That a committee of members of the Society, including a representative from each of the great centres of population in England, Scotland, and Ireland, be appointed to investigate the subject, and make a report upon the hearing power of school children, the investigation being carried out on the lines adopted by Mr. CHEATLE; and that such committee report to this Society as soon as possible." If

that were done, and a comprehensive study were made in say ten centres, 1,000 in each centre, the figures could be embodied in a report, and that report issued under the hallmark of the present Society of Experts.

Dr. DUNDAS GRANT joined in the tribute of thanks to Mr. CHEATLE for his work, which he characterised as a monument of industry and a great tribute to his self-sacrificing indefatigability. With regard to the cases of congenital perforation of Shrapnell's membrane, Mr. CHEATLE had put a query mark, whilst he, Dr. GRANT, had generally looked upon them as being acquired, and as the result of former suppuration which had become exhausted, and had had its last rallying point in the little pocket above the short process of the malleus. In some such cases there was considerable fixation of the malleus. In half the cases of the kind examined by Mr. CHEATLE there was no defective hearing. Did Mr. CHEATLE make use of Siegles' speculum? If so, could he add anything on the point? The cases of sclerosis merited great attention. It was remarkable that all the cases were in females, more especially as the patients were not old enough for the disturbances incidental to the sex to assert themselves.

The alarming number of cases of chronic middle ear suppuration constituted the strongest argument for carrying out such steps as Dr. MACNAUGHTON-JONES had recommended. The way to bring about a reduction of such cases was to disseminate a wider knowledge of the methods of treating acute inflammation of the middle ear. The greatest advance made in that respect was the application of antiseptic or aseptic methods to the ear before perforation took place. In other cases, the early performance of the mastoid operation in cases of acute suppuration in the middle ear was beneficial. He hoped the Society would urge the need for action in regard to the poorer children of the community.

Dr. FAGGE asked whether, in any case of middle ear suppuration, hearing was afterwards fully restored. Members of the Society seemed to have arrived at the conclusion that they had now heard the worst of the ravages of ear disease

among the children of the poor in England; but he believed they had only heard a fractional part of it, because the Hanwell Schools were drained into the deaf children's school of the London School Board, and thus the deaf children of the Hanwell Schools' district were taken to the deaf centres. Thus, in the deaf centres there was a condition in which 100 per cent. of the children were as bad as any of those in the present report. Until one could carry back into such schools as Hanwell the children who had passed into the deaf centres, the true average of the amount of deafness in these children could not be arrived at. At such centres he was astonished at the number of children who were deaf as a result of old suppuration.

Dr. HERBERT TILLEY referred to the cases of sclerosis in the report, and to the remark "slight adenoids." He asked what that meant. Was it that the amount of adenoid tissue, though slight, was sufficient to cause obstruction? In nearly every child up to five or six years of age one could find a certain amount of lymphoid tissue in the naso-pharynx, but he would not regard that as an abnormal condition. Another question was whether, in those cases of early sclerosis of the middle ear, Mr. CHEATLE had found any nasal or naso-pharyngeal obstruction which gave support to that overstrained theory of "negative pressure" which was so often invoked in connection with sclerosis of the middle ear. He thought that element (nasal obstruction) was greatly over-rated, and would be glad to know if Mr. CHEATLE found any cases of nasal obstruction in children which would tend to uphold the theory that nasal obstruction was in any way largely responsible for such cases of sclerosis, or dry catarrh of the middle ear.

Dr. JOBSON HORNE said he did not propose to take up the various points raised, as the purpose of the meeting was a kind of stock-taking of the otological status of the community. It was desired to arrive at some practical scheme by which the work could be carried further, and some definite resolutions put before either the Local Government Board or the Board of Education; but he hoped before anything was

submitted to those authorities the Society would take a note of warning from what was done when the matter of the eyesight of school children was inquired into. In Circular 456, issued by the Board of Education, it would be seen that after many years of most patient work, carefully done by the best men of the day, the Education Board recommended that in cases where the eyesight of children was defective, the district nurse could inspect it, and that if *in her opinion* it was defective, the child should be taken to a special Ophthalmic Hospital or to the nearest doctor. Otologists did not wish to have their work terminated in such an extremely unfortunate manner.

The President conveyed to Mr. Cheatle his own and the Society's appreciation of his great labours. The report was startling, even to Otologists, who knew that children had generally been neglected before they were brought to the clinics. The points which interested him most were, first, the question of congenital perforation in Shrapnell's membrane. He believed such cases were met with, and that they were not due to disease. He had met with cases in which there had been no history of suppuration, and the perforation was quite circular, with no suggestion of inflammation having been the cause. The next point was the large proportion of children who had foreign bodies in the ears. With regard to teachers judging of the amount of deafness, he thought one of the saddest points was the way in which teachers punished deaf children. Some years ago, at King's College Hospital, he remembered a sharp little London boy coming for treatment. On one occasion he said to him, "Well, how are you, Tommy?" The answer came very smartly, "Better, sir." He asked him, "How do you know?" And as sharply came the reply, "Don't have the cane so often, sir." Teachers must not be expected to know much about tests for deafness. A sad part of the report was the large number of cases of chronic suppuration, cases of children who were in danger of losing their lives from the condition. It was disquieting to reflect that probably 10 per cent. of the children running about the

streets had suppuration in their ears, and that out of 88 of these, 71 had adenoids. Six of the children mentioned by Mr. CHEATLE were in such a condition that the complete post-aural operation was necessary at once. He would like to ask Mr. Cheatle how many cases of adenoids had been operated upon. With regard to earache, mothers generally attributed that to a little neuralgia, and as of no consequence. A history of earache could not be obtained unless the inquiry were made with great care. He quite agreed with the suggestion to form a committee, but he thought there was no need to wait for further figures, as action could be taken on the basis of Mr. CHEATLE'S report. He would, therefore, suggest a slight amendment, to the effect that a committee be formed at once out of the Society, not to investigate further, but to see what recommendations they could make to remedy these evils which had been proved absolutely to exist.

Mr. CHEATLE, in reply, said his best thanks were due for the way his report had been received; his labours were much lightened by Dr. LITTELJOHN, without whose help he could have done very little. Mr. MURRAY'S report was interesting, but he hoped he would not be considered hypercritical if he suggested it was not thorough enough. In regard to Dr. LITTELJOHN'S question as to whether barrack schools were better than boarding out, he thought the large school was preferable in questions of treatment. He did not see much danger of contagion in ear disease, though he was open to persuasion on the point. He expressed his obligation to Dr. LITTELJOHN for the correction in regard to the acute cases. The mistake arose through acute cases being mentioned by the nurses, and he was under the impression they were separate cases which were in the infirmary. Very few of the patients suffered from pain. Possibly the perforations had been there before and some fresh infection occurred. There was no pain before the discharge came on. Dr. PERMEWAN approached the subject from a most important point of view, namely, that of the mental condition. He, Mr. CHEATLE,

suggested that Dr. PERMEWAN'S report, Mr. MURRAY'S report, and Dr. MACNAUGHTON-JONES' report should be embodied with his own as a basis of any resolution which was sent out to a governing body. He agreed that it was very difficult to get histories in the poorer classes. Many of the children were waifs and strays, and had been thrown upon the streets early in life. Dr. MACNAUGHTON-JONES made an interesting suggestion about congenital syphilis. A short time ago he, Mr. CHEATLE, published a paper on the question, showing that a large number of such cases had not received anti-syphilitic treatment in their infancy. In that paper he suggested that perhaps treatment in infancy and during the growing age might tide them over a dangerous period in their lives. Mr. JONATHAN HUTCHINSON, however, was not in favour of that. He agreed with Dr. MACNAUGHTON-JONES that the question was a national one, not municipal nor local. It had been so recognised in Germany owing to the efforts of Dr. Hartmann. He could not say any more in reply to Dr. GRANT than he had stated in the report. He did not use Siegle's speculum in those cases of perforation of Shrapnell's membrane. The membrane appeared practically normal in all of them, unless he mentioned to the contrary. He did not agree with Dr. GRANT that sclerosis did not begin early in life. What he said about antiseptic treatment of acute otitis was very important. In reply to Dr. FAGGE he could not say whether hearing was absolutely established after acute middle-ear suppuration. Every patient who had had suppuration probably had some deterioration, but not enough to affect hearing throughout life. It was right that the deaf mutes should be added to the other cases to get to the true state of affairs. In reply to Dr. TILLEY, by slight adenoids he meant an appreciable elevation in the post-nasal space. The report answered the other questions of Dr. TILLEY. He thought the first thing to do was to submit a cut-and-dried scheme to the authorities. To make that effective it was necessary to investigate the methods employed in Germany, Switzerland, and Sweden. He could not answer the President's question as to how many

of the children had been operated upon for adenoids. As many as came under his observation he had noted in the body of the report.

Dr. LITTELJOHN said that some time ago 100 children had been examined, and four-fifths of them were recommended to be operated upon. Those were sent in batches to St. Bartholomew's Hospital for the purpose.

The PRESIDENT announced that Dr. MILLIGAN had agreed with him as to the wording of a resolution which he would submit to the meeting: "That a committee, consisting of the President, Secretaries, and three other members of the Society, be appointed to draw up recommendations anent a compulsory examination of the hearing power of school children; such report to be presented at an early meeting of the Society for subsequent transmission to the School Authorities."

The resolution was submitted, and carried unanimously.

On the suggestion of the President, the following were appointed from the body of the Society:—Mr. Arthur Cheatle, Dr. Macnaughton-Jones, Dr. Permewan. These, together with the President and the two Secretaries (Dr. Milligan and Dr. Jobson Horne), would form the sub-committee.

NINTH ORDINARY MEETING.

Saturday, May 31*st*, 1902.

Held in the Anatomical Department of the Medical School of Trinity College, Dublin.

The PRESIDENT, Professor URBAN PRITCHARD, IN THE CHAIR.

The following gentlemen were nominated for election:—

HERBERT W. CARSON, F.R.C.S., 26 Welbeck Street, W.

ANDREW LITTLE, M.B., C.M. (Aberd.), Manningham Lane, Bradford.

ANTHONY MCCALL, M.D. (Glasg.), Boscombe Court, Bournemouth.

GEORGE MURRAY, M.R.C.S., L.R.C.P., 2 Harley Street, W.

EDWIN ARTHUR PETERS, M.D., B.C. (Cantab.), 52 Wimpole Street, W.

HUNTER FINLAY TOD, M.B., B.C. (Cantab.), F.R.C.S., 7 Wimpole Street, W.

The SECRETARY submitted the following report:—"Gentlemen, your Committee appointed to consider the desirability of securing for the children of the poorer classes systematic detection and treatment of ear disease, and to report at an early date to the Society, having carefully considered the reports submitted and the experiences recorded at the special meeting held on April 14th, have arrived at the following conclusions:—(1) That there exists among the children of the poorer classes a very large amount of ear disease which is preventable and curable; (2) that it is not sufficiently

recognised that ear disease in childhood tends to considerable loss of hearing, health, and life, that it militates against a child's education, and that later on the subjects of it are seriously hampered in their life's work and often incapacitated for the services of the State; (3) that ear disease in children is often not treated, partly owing to neglect, and partly to ignorance and to the belief in popular fallacies, and more especially to an inability on the part of parents and teachers to detect it; (4) that any scheme having for its object the security of children against the consequences of ear disease to be efficient must provide for thorough and systematic examination and treatment; (5) and, lastly, having regard to the national importance of the subject, we recommend that a memorial embodying this report be submitted to the President of the Committee of the Council on Education.—Signed, Urban Pritchard, President; Arthur H. Cheatle, H. Macnaughton-Jones, W. Permewan; and W. Milligan, and W. Jobson Horne, Hon. Secretaries."

Mr. STORY moved the following resolution:—"That the report of the committee appointed on April 14th to draw up recommendations anent a compulsory examination of the hearing powers of school children be adopted, and that the Secretaries of the Society be instructed to carry out the recommendations contained in Clause 5 of the report." Dr. WOODS seconded the motion, and remarked that the frequency with which children were boxed on the ears had an injurious effect on their hearing powers; such a mode of punishment was calculated to bring on an abscess, and in one case of which he knew death resulted, consequent on brain trouble that set in afterwards. Would it be advisable to refer to the matter in that report?

The PRESIDENT suggested that Dr. Woods should make out a report of that case, and send it to the Hon. Secretaries for the committee.

The report was adopted unanimously.

A case of temporo-sphenoidal abscess following middle ear disease.

By R. H. Woods.

A patient, *æt.* 28, a railway guard, was admitted to the Richmond Hospital. For a fortnight previously there was a discharge of fœtid pus, this ceased but was followed by an attack of violent and sharp headache. He was then admitted to hospital under the impression that probably he was suffering from typhoid fever. His condition was as follows: He looked very dazed, his pupils, especially the right, were dilated, but reacted slowly to accommodation and to light. The tongue was covered with a thick fur, brown in the middle and white towards the tip and edges. He was perspiring freely, and the body was covered with a sudaminous rash; he complained of great pain in the abdomen, especially in the right iliac region; a loud systolic murmur was to be heard in the mitral area, and could be followed into the axilla; the upper angle of the left posterior triangle of the neck, just at the base of the skull, was very tender, especially on firm pressure. He had no paralysis, motor or sensory. At Dr. O'Carroll's request Mr. Woods examined him on September 30th, when his body was almost bathed in sweat. His breath had a very disagreeable odour, and the teeth were covered with sordes. He frequently lost consciousness, was unable to recognise his relatives, and was very restless, getting out of bed and tossing the clothes about. Cerebration was slow; even in his more lucid moments it was difficult to get him to answer questions coherently. When asked his address he gave a former one, and he was unable to recognise familiar objects, though he understood and could tell their functions. Thus, when shown a bunch of keys he could not by any effort think of their name, though when asked what they were for he had no hesitation in replying that they were for opening locks of doors. Similarly, when shown a pocket-knife, without being able to say what it was, he could tell

that it was useful for cutting tobacco, but, if in the same moment he was shown tobacco, he had the same difficulty in naming it as if he had not used the term at all. Or, if one persisted in the question, he might call it an overcoat or a walking-stick, or something equally absurd, though he was quite aware it was used for smoking or chewing. His pulse was feeble, but not frequent. He was emaciating rapidly in spite of the fact that he took fluid nourishment fairly well. He complained of thirst, a bad taste in the mouth, and of frontal and occipital headache. He was on one occasion observed to have a slight degree of opisthotonos during a rigor. Ophthalmoscopic examination showed that he had double optic neuritis. The urine (sp. gr. 1037) was acid, and there was a precipitate of urates and a trace of albumin, but no sugar. His temperature was now taken every four hours, and the difference between the curve on the ordinary clinical chart and that of the four-hourly chart was most marked and most instructive. The ordinary chart, which, for curiosity's sake was marked at the same time, showed a curve varying two or three degrees from day to day without any regularity, and so devoid of character that absolutely nothing could be learnt from its inspection or, worse still, whatever was learnt was wrong. Some idea of its deception may be formed from the fact that on October 3rd, when the patient was at his worst—as shown by the four-hourly chart —his maximum and minimum temperatures for the day differing by 8·5° F.—the ordinary chart told nothing more than at a certain hour in the morning his temperature had been 98° F., and in the evening 99° F., a not very serious condition, if the chart was the only guide to one's opinion. This was as good an illustration as one could have of the danger of using ordinary charts where intracranial pyogenic trouble is suspected. On examining the four-hourly chart it was seen that on the days immediately preceding the first operation there was the most marked similarity between the sequence of events. On each day the morning temperature was subnormal by a degree or even two, in the middle of the day a rise coincident with rigor occurred, the temperature

passing 104° F. followed by a fall to subnormal again as night approached. After he had thus been observed for a few days, there seemed to be no doubt that whether he had typhoid fever or not he was suffering from intracranial mischief, the result of the suppurative ear disease, and from the character of the temperature chart, the tenderness in the posterior triangle of the neck, and other symptoms a diagnosis was made of sigmoid sinus thrombosis.

On October 5th, 1895, the patient being too ill for removal to the surgical hospital, he was chloroformed in bed. A vertical incision was made immediately behind the left ear and the bone being removed from Birmingham's triangle with mallet and gouge, the mastoid antrum was exposed. From this cavity a quantity of fœtid cholesteatomatous *débris* and granulation tissue was removed and exit given to a few drops of greenish pus. The antral walls were inspected but no matter could be seen escaping. The bony opening was then enlarged backwards until the groove for the sigmoid sinus was opened up. The sinus was split open and the clot removed. The dura mater was then lifted gently away from the bone in various directions. An abscess was found on the cerebellar aspect of the petrous bone and about two drachms of fœtid pus evacuated. The cavity was syringed out with carbolic lotion, a drainage-tube inserted, and the outer portion dressed with iodoform gauze. The patient was much benefited by the operation, but not, however, as much as was expected. His mental condition remained blurred. It was concluded that there was yet another lesion, probably brain abscess, unrelieved. The symptoms pointed rather to the cerebrum than the cerebellum as the seat of the trouble, but the fact that pus had already been found in the cerebellar fossa indicated the cerebellum, as being the more likely place. It was, decided to place the exploratory wound so as to have access both to cerebrum and cerebellum. The second operation was performed on October 7th. A trephine hole was made behind and above the mastoid process opening, directly over the lateral sinus, so that access could be had both above and below the tentorium. Great care was taken

to prevent contamination from the mastoid wound which was now discharging fœtid pus. A hollow needle was passed into the cerebellum three times with negative results, and consequently it was decided to try above the tentorium. The punctures in the dura mater were therefore sealed by being liberally sponged with compound tincture of benzoin to ensure against contamination from the neighbouring pus. In order to get quite clear of the lateral sinus, it was found necessary to enlarge the trephine hole slightly upwards by taking a half-moon out of its upper edge; this having been done the temporo-sphenoidal lobe was tried, and at the third insertion of the needle we were awarded by the appearance of pus. A crucial incision was made in the dura mater, and a pair of catch forceps entered along the track of the needle and redrawn with the blades open. Exit was thus given to over four drachms of horribly fœtid pus, together with numerous brain sloughs. The cavity was washed out with a weak carbolic lotion, and a drainage-tube inserted. Notwithstanding the fact that he had a mitral murmur, we felt bound to give him chloroform rather than ether at both operations on account of the unsuitability of the latter in such cases, and it is worth noting that he took the anæsthetic perfectly. The patient made steady if somewhat slow progress to complete recovery. He remembered nothing of the two operations, nor the fact that he had consented to their performance. The only permanent effect left behind is that though his mental condition is perfectly clear, he is inclined to be what might be called "huffy." On the slightest provocation he is inclined to consider himself injured. He was discharged from hospital on December 14th, 1896, and returned to his work a couple of weeks afterwards. About twelve months ago he was transferred from one station to another, and came to the conclusion that the transference was brought about by some enemies of his, although, as a matter of fact, he was getting lighter duty than what he had been doing. Sooner than submit to it he resigned, but was very sorry for it afterwards. At present he is in full possession of all his faculties.

Mr. CHEATLE said he should like to have details from Dr. Woods regarding the treatment of the abscess, particularly with reference to drainage.

Dr. NELSON said in the year 1882 he had a case resembling that of Dr. Woods' in many respects. In the operation performed he opened the antrum, then went a little up, made a perforation right through the skull and let out a large quantity of pus. He considered that the case was important from an historical point of view, as it was the first case on record in which the cranium had been perforated for the relief of an extra-dural abscess, also due to old-standing suppurative ear disease.

The PRESIDENT asked if it had been a success.

Dr. NELSON said that they had been able to insure his life subsequently.

The PRESIDENT said it would be very interesting if they could get the history of all the successful cases, and how the patients got on in after life but unfortnnately so many of these cases were lost sight of. He mentioned a case similar to these under discussion which came under his own observation some eight years ago. The abscess was opened exactly in the position that had been described. The patient got into that half-recovered condition which so many of them had noticed, and it was only some days after they had got the drainage-tube well into the substance that the man began to recover and then to rapidly recover. He was subject to epileptic fits afterwards, but these gradually passed off. He had them for about three years at intervals, and then became practically quite well and they lost sight of him.

Dr. WOODS said that in the case of his patient the brain abscess was drained through a fairly large drainage-tube, perforated at the sides, and was dressed every day. He thought that, on trying to change the tube for another, the second tube did not go in as well as the one that had moulded itself to the opening. For that reason he used the same tube every day, cutting off as much of it as was excluded by the gradual closing in of the abscess. The

loss of substance was probably about half a cubic inch of the brain.

Intranasal growth perforating and spreading over hard palate.

By Patrick Dempsey.

The history of the case was the ordinary history of nasal obstruction nearly altogether confined to the left side. The patient was a boy, *æt.* 12. About four years ago it was noticed that his nose was becoming stuffed. The stoppage of the nose increased gradually until finally it became complete. This went on for a couple of years, and the patient noticed a growth arising from the palate of the mouth. On examination it was found that the left nostril was completely covered by a soft, pinkish growth which bled freely on being touched. On opening the mouth, the palate was seen to be covered almost entirely by a soft, pink mushroom-like growth, evidently born of the original growth. The naso-pharynx appeared to be also completely occluded by a growth. On digital examination, however, the vault was found to be free. The diagnosis was that the case was probably one of fibro-sarcoma arising either from ethmoid or antrum Highmori. His object in bringing it there was to get some suggestion as to the best mode of treatment. It seemed a pity to send the boy back to die without doing something for him.

Dr. Milligan said that Dr. Dempsey had been good enough to allow him to put his finger into the back of the boy's nose. In his opinion the vault was not free, and he thought that in all probability the growth sprang from the basi-sphenoid and did not show any very malignant tendencies. As they all knew, these growths were of various degrees of malignancy. Having quoted a somewhat similar case and referred to the mode of treatment which brought about recovery, Dr. Milligan said he was of the opinion that the growth could be completely drawn out by means of a snare after partial resection of the upper jaw, and then,

with a long chisel, part of the basi-sphenoid could be gouged away. It was worth while trying the operation. The boy appeared to be becoming slightly hectic, and he thought something ought to be tried very shortly.

Dr. JOBSON HORNE, speaking of the nature of the growth, said he had had the opportunity in similar cases of microscoping portions removed from such growths and of following the subsequent history, and had formed the opinion that the terms "fibroma," "fibro-sarcoma," and "sarcoma," had been loosely applied. The tumours commonly consisted of immaturely formed connective tissue, so that from a histological standpoint the term "sarcoma" was permissible in its hitherto comprehensive sense. On the other hand, these tumours did not tend to form metastases; when they became destructive to life it was by direct physical means, and not by infiltration or secondary infection. Dr. HORNE thought the growth in this particular case had started from the septum of the nose, that it was the outcome of an irregularity in development, and that surgical treatment should be undertaken with a view to getting at the seat of origin. There was, of course, the danger of hæmorrhage, but he did not think that that would be very serious.

Dr. WOODS thought with the other speakers that this tumour should be removed. The boy ought to be given every chance, but he would hesitate to say whether the operation would be successful or not. He thought it would be enough to get away the active part of the growth—that part of the tumour which was the mother-part, so to speak. He considered complete removal of these tumours was out of the question.

The PRESIDENT concurred in considering that the boy should be operated on; it was not at all clear where the origin of this tumour was. He thought that it came from the maxillary antrum. In a similar case the patient died on the operating table, but as an operation was the only chance of saving life it ought to be attempted.

A case of naso-pharyngeal growth.

By. J. B. Story.

A man, first seen in August 1897, came with a history of nasal obstruction for some uncertain time, and bleeding from the throat for three or four months. The soft palate was seen to be pushed forward, and an ulcerated tumour projected into the pharynx behind. The tumour was removed by the electric snare with very considerable difficulty in August 1897, hæmorrhage having set in at the time. A recurrent growth was removed also by electric snare in January 1898, with hardly any bleeding. The electric cautery was then applied for some weeks. Again in December 1898, a large piece was similarly snared. Dr. Earl's reports on the tumour of 1898 stated that it varied in different places, portions being fibro-myxoma, other parts fibroma, rather cellular, others very cellular fibroma, and here and there a field which had all the appearance of spindle-celled sarcoma. Dr. Beatty's report on the tumours of 1900 contained the following: "Chiefly fibrous tissue, in places vascular; large vessels everywhere, and in places practically cavernous. In one portion of the section the tissue consists of spindle-cells, but they are not arranged in the regular streams used in sarcoma; and, as all the blood spaces have distinct walls, the tumour is probably non-malignant." Nothing had been seen of the patient since the beginning of 1900.

Dr. Permewan was of the opinion that the method of removing tumours by means of a snare was not always satisfactory, and, generally speaking, he thought that the use of forceps was more advisable. That was the method he suggested in the present case. There was considerable growth on the right side of the nose, and he was not so sure that there was not as much on the other.

Dr. Woods said in cases where the tumour is attached to the place from which it originally grew, he did not think

that a better method could be adopted for removal than the electric snare, and explained the mode of procedure by which, with a piece of platinum wire, he was able to plough pieces of a tumour away, and in that way benefit a patient. The difficulty in the way of that course was entirely a question of attachment. When secondary attachment had set in the operation was very difficult.

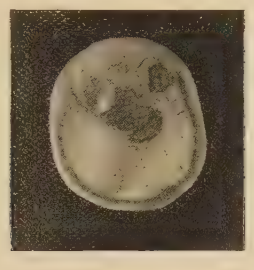
A case of double perforation of the membrana-tympani, the result of being struck by lightning.

By H. Macnaughton-Jones.

The details of the case were briefly as follows: On December 24th last an officer was sitting on the floor of his tent on blankets, drinking tea from an iron cup. A storm was passing at the time. He was not conscious of anything until he found himself, as he expressed it, paralysed, with the exception of his left arm. He thinks that two hours may have elapsed between the time of his being struck until he was found. He was revived with brandy and strychnine injections, and vomited freely during his transit to the hospital three miles away. The hair on his left temple was burned, and also that on the pubes. There was an abrasion of the right breast, and a stripe about an inch and a half broad running down from this to the penis, from which it deflected over the right thigh, terminating in a mark "with a cut like a whip." There were still marks remaining on the skin when he was last seen at the end of March. There were also burns on both shoulders over the scapula, and another small one behind the right shoulder. The excoriation over the left shoulder was considerable. The hearing of the left ear was seriously affected, and the perforations were discovered a few days later. Curiously enough, the tent was not injured, and the flash had apparently struck within a few yards of it. On examination, the entire tympanic membrane was injected, and of a deep red colour. There were two perforations present, one in the posterior

superior quadrant, and the other below the umbo. The watch was heard just off contact, and a whisper close to the ear. The most troublesome symptom was a rather loud tinnitus. Some uneasiness and distress, hardly amounting to pain, were felt in the ear. There were no other evidences of nerve impairment elsewhere. There was little to be done in the way of treatment. Periodical application of a weak solution of nitrate of silver to the membrane were made; the ear was protected with antiseptic gauze; and Lucas's

Fig. 10.



inflater was occasionally used. When seen at the end of March the hearing was greatly improved, a whisper was heard at some twelve feet away, and, as estimated by Edelmann's Galton pipe, a tone of 10,000 vibrations per second, as compared with 35,000 in his unaffected ear.

The case was interesting, not only from the point of view of the marvellous escape he had, but also as it was the only one of which he was aware in otological literature in which perforation of the membrana-tympani had been found as the result of lightning.

Mr. Cheatle stated that a similar case was referred to in the late Mr. Hinton's *Aural Surgery*, published in 1874, page 124. The case was fully reported by Mr. Lee in the *British Medical Journal* for August 2nd, 1873. The late Dr. Peter Allen, who saw it, found a laceration of the membrane.

Demonstration of the central connection of the nervous acusticus in man and the anthropoid apes.

By Professor D. J. CUNNINGHAM.

In this demonstration Professor CUNNINGHAM exhibited, by means of the projection lantern, the various tracts and nuclear internodes which exist between the two parts of the cochlear nucleus and the inferior quadrigeminal body and the corpus geniculatum internum in man, the chimpanzee, the orang, and the gibbon.

A series of lantern slides.

By Professor COFFEY.

Professor COFFEY, with a series of lantern slides, gave an interesting demonstration of nerve endings in the ventral cochlear nucleus, the superior olivary, and the trapezoid body.

Lantern demonstration of microphotographs of sections of the internal ear.

By URBAN PRITCHARD.

1. Transverse section of the cochlea of a new-born kitten. Showing the central canal of the cochlea (ductus cochleæ), the membrane of Reissner in position, ligamentum cochleæ with stria vasculosis, membrana tectoria, etc. × 50 diam.

2. Transverse section of cochlea of same kitten. Showing acoustic nerve, spinal ganglion, membrana basilaris with rods of Corti, etc. × 50 diam.

3. Cochlea of new-born kitten, transverse section of organ of Corti, almost perfect. Showing rods of Corti, cells of Corti, and Deiters, membrana tectoria, etc. × 200 diam.

4. Cochlea of adult cat, transverse section. Showing adult rods on membrana basilaris. × 200 diam.

5. Transverse section of cochlea of the duckbill (ornithorhynchus platypus). Showing the three scalæ, S. vestibuli, S. media (ductus cochleæ), S. tympani proving its mammalian type. ×40 diam.

6. Transverse section of the cochlea of a magpie. Showing the type of the bird's cochlea. The ductus cochleæ with tegmentum; the quadrilateral and triangular cartilages, with the organ of Corti between; the scala tympani, containing the nerve and ganglion. ×40 diam.

7. Transverse section of macula acustia where it is adherent to the wall of the vestibule (cat). Showing thorn cells and bristle cells, and nerve filaments, passing from the bone into the cellular layer. ×250 diam.

Microscopical sections of the internal ear.

By Patrick Dempsey.

Slide I.—Longitudinal section of an ampulla through the crista acustica. The preparation showed the crista acustica with its auditory epithelium and auditory hairs projecting into the cupula terminalis; the latter was beautifully marked.

Slide II.—Section through the cochlea demonstrating the organ of Corti, membrane of Reissner, terminal filaments of the auditory nerve, etc. Both these sections were taken from the labyrinth of the guinea-pig. They were stained in a half per cent. solution of osmic acid, fixed in a solution of glacial acetic and chromic acids, decalcified with nitric acid, and mounted in celloidin.

A vote of thanks was passed to the Reverend the Provost of Trinity College and to Professor Cunningham, for allowing the Meeting to take place in the Anatomical Department of the University.

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